INTRA-SETTLEMENT COMMUNITY ORGANIZATION AT NDONDONDWANE: AN EARLY IRON AGE SETTLEMENT IN THE THUKELA VALLEY, SOUTH AFRICA

By

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Abstract

This thesis will explore the question of how to determine whether sites represent homesteads or villages. It will examine the archaeological data from an EIA settlement Ndondondwane, in KwaZulu-Natal, South Africa, in light of the ethnographic literature on household structure, organization, and growth and decay cycles. The data from the site will be used to test various organizational models. Ndondondwane was chosen because it is the only archaeological site in southern Africa that has a sufficient quantity and diversity of spatial information available. Ndondondwane provides a unique opportunity to explore the development of the nature of the settlement, from its colonization to abandonment.

Preface and Acknowledgements

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CHAPTER 1: INTRODUCTION TO THE PROBLEM

I. Introduction to the problem

What is the nature and number of domestic units in Early Iron Age (EIA) archaeological sites in southern Africa? Are sites inhabited by a single household (in which case it is a homestead) or by several households (in which case it is a village)? Does a household correspond to a house or is it a more complex affair? These are questions that have been a subject for investigation for at least the past twenty years. However, archaeological investigations that seek to identify the actual relations between domestic units at a site are extremely limited.

Most attempts at understanding the relationship between architectural units and their distribution at EIA sites have been based upon the Central Cattle Pattern (CCP) model (Huffman 1993; Lane 1998; Whitelaw 1994). These studies simply accept the physical distribution of features as a reflection of behavior – that where the archaeologist finds material is where it was made, used, and discarded. The researchers relied upon a presumed relationship between the spatial distribution of behavior observed in the ethnography of the region and intra-site spatial distribution of artifacts and features in sites (e.g. Huffman 1993; Lane 1998; 198-199; Whitelaw 1994; van Schalkwyk et al. 1997). Such a conclusion relies upon the assumption of cultural continuity between the present and past cultures. This assumption creates problems in the analysis of archaeological sites because it presumes relationships that can lead to misguided interpretations. But, it is also a flawed assumption since it ignores site formation processes (taphonomy). Only Greenfield and his team (Fowler et al. 2004; Greenfield and van Schalkwyk 2003) attempted to take into account the intimate relationship between

artifact and feature distribution, and the taphonomy of the site, as potential variables for reconstructing the spatial organization and structure of behavior.

The goal of this thesis is to determine the nature of domestic unit organization at Ndondondwane, an EIA site located in southern Africa. Most archaeological studies of EIA sites in the region either ignore the issue or assume that the settlement represents a village because it is relatively large (e.g. Huffman 1993, 2000: 17;Whitelaw1994). They do not distinguish between the concepts of household, compound, homestead and village. They simply assume that most EIA archaeological sites are villages.

This thesis will explore the question of how to determine whether sites represent homesteads or villages. It will examine the archaeological data from an EIA settlement Ndondondwane, in KwaZulu-Natal, South Africa, in light of the ethnographic literature on household structure, organization, and growth and decay cycles. The data from the site will be used to test various organizational models. Ndondondwane was chosen because it is the only archaeological site in southern Africa that has a sufficient quantity and diversity of spatial information available. Ndondondwane provides a unique opportunity to explore the development of the nature of the settlement, from its colonization to abandonment.

II. Nature of domestic units in southern Africa – ethnographic considerations

The domestic unit is a complex social and economic affair, especially in terms of the general ethnographic domestic patterns in eastern and southern Africa (Oboler 1994: 342). Domestic units exist and operate on a number of levels.

Ethnographically, a homestead is organized around a single extended family within a single patrilocal compound (see Ruel 2000: 64-65). Homesteads have a single,

polygynous homestead head. The husband controls the means of production (e.g. livestock). Women store grain from their fields close to their abodes (in pits), while the settlements headman's grain storage occurs in the center of the compound (Whitelaw 2005: 2). Since modern Nguni cultures of the region are polygynous, a patrilocal unit may have more than one wife. A homestead may at times contain more than one physical house building, depending upon the number of wives and activities within the homestead. Each wife will have her own house and associated household items, which in effect represents a matrifocal unit. As a result, a homestead may have several matrifocal units, each with their own houses (i.e. the wive's huts). These are in effect constituent households of the larger patrilocal homestead. Each of these structures contains the household, its social manifestation of the wife and her offspring. There is a certain degree of economic autonomy within each matrifocal unit. Each matrifocal unit is in charge of agricultural production, crop storage, and daily consumption for its own members and is assigned a portion of the herd for its domestic and social needs. In cases with multiple wives, the wives are ranked in order of seniority. There is also a certain degree of sharing between matrifocal units since they share the same husband, who retains control of certain resources (e.g. livestock). Herds are usually kept within an enclosure surrounded by the houses of the various wives. The homestead head will often have control over a residual herd, which he can allocate for his own marriages and for those of any sons for whom the household allotment may not be sufficient, and sometimes for sisters' sons. In a homestead, there is spatial duplication of female-related activity areas, but not in male-related ones (Oboler 1994: 342-344).

A village occurs when two or more unrelated patrilocal domestic units come

together. These can become very large and organizationally complex, depending upon their size and position within a regional hierarchy. In essence, however, the patrilocal compound as described for the homestead continues to exist within villages. Instead of individual patrilocal homesteads, a village is composed of many such clusters of social units living in close proximity. As a result, there is duplication of both male- and female-related activities in a village (e.g. there may be several livestock enclosures). In a village, some resources are shared (e.g. labour for herding of cattle), but all other resources are separately allocated. There are several husbands with their multiple wives, each husband has his own compound and each wife has her own house. Between them, they control the resources for the extended family unit. (Oboler 1994: 342). In a village, there is more degree of independence, not the same economic integration as a homestead. If there are married sons, each son will gather their wives into their own economic structure (and hence clustering occurs). Most studies that are interested in social aspects of EIA villages have been undertaken on large settlements. The immediate implication is that the researchers are dealing with villages (Huffman 1993; Whitelaw 1994; van Schalkwyk 1994a, 1994b;). However, there is an abundance of smaller settlements. These are largely ignored in the literature, although occasionally excavated (see van Schalkwyk 1991). The implication is that the small sites represent homesteads. This dichotomy also exists in the modern ethnography from the region, where villages are large settlements composed of several unrelated patrilocal polygnous families, while homesteads are small and correspond to a single patrilocal polygnous family (the husband) and one or more matrifocal units (the wife or wives) (Kuper 1982; Oboler 1994).

However, one cannot simply assume that small sites represent homesteads and

large sites represent villages. The best example is Ndondondwane where recent studies have downgraded it from a large to a medium-sized site (from c. 10 ha to c. 4 ha during its largest phase of occupation (see differences in size estimates from Loubser 1993; van Schalkwyk 1995; van Schalkwyk et al. 1997 against Fowler et al. 2005; Greenfield and van Schalkwyk 2003). Is it a homestead or a village? It would appear spatially to be in that grey area.

III. Data

Ndondondwane was the first site to be excavated and investigated spatially (detailed recording of three dimensional provenances) during the fieldwork phase with spatial issues in mind (van Schalkwyk et al. 1997). The social composition of domestic units cannot be easily mapped by a simple comparison of the distribution of physical structures. Identifying the social composition also requires consideration of artifacts and ecofacts. Other frequently cited nearby sites, such as KwaGandaganda and Broederstroom (see appendix) are not as useful for the proceeding investigation because of the lack of detailed provenance of the artifacts.

Ndondondwane is the ceramic type-site for the Ndondondwane sub-phase (700-900 AD, uncalibarted radiocarbon date taken from a sample from Horizon 2) of the Early Iron Age (EIA) sequence of the province of KwaZulu-Natal, located in South Africa (Figure 1). It is the middle and fluorescent phase of the EIA for the region. The site of Ndondondwane is found on the flood plain of the Lower Thukela River valley adjacent to the left bank of the river. This flood plain consists of highly fertile soils, ideal for the cultivation of crops and the feeding of domesticated animals. Both cultivated food-plants and animal remains have been excavated at several EIA archaeological sites.

Several teams of investigators collected data from the site over almost 20 years of research (Maggs 1984b; Loubser 1993, Greenfield and van Schalkwyk 2003; van Schalkwyk et al. 1997). The data are contained in a variety of different formats. Information was recorded in both a paper and digital format (spreadsheets). The digital data include the types and locations of all the artifacts recovered at the site, while the maps indicate the location and extent of features. Some of the maps also indicate the distribution of artifacts, since, in the last season, artifact distributions were plotted. In addition, there are notes, soil types, stratigraphic analysis, and feature information. The artifacts and feature distributions of the above data will be described, and analyzed in a GIS framework to provide an indication of the type and number of domestic units present in an EIA settlement.

IV. Research Hypothesis (model)

The issue that needs to be investigated is whether Ndondondwane was a homestead or a village. The following hypotheses are set up to organize the investigation of this question. There are large concentrations of remains distributed in an arc around the periphery of the settlement, and are distinguished from the features and artifacts found in the center of the settlement. Two basic hypotheses can be proposed:

1. If the archaeological data shows that there is no repetition of male-related activities and repetition of female-related activities across the site, then this would suggest that the site is integrated into a single domestic unit. Hence, the site is a homestead.
2. If the archaeological data shows that there is repetition of male-related activities and repetition of female-related activities across the site, then this would suggest that there are multiple compounds present. Hence, the site is a village.

The identification of a homestead as proposed in hypothesis 1 is based on the fact that resources of several inhabitants (e.g. related households, that is to say a husband and his wives) are pooled. This results in an uneven distribution of food production, specialty tools and modified material residue (i.e. debitage) viewed in the archaeological record (see Huffman 1993; Whitelaw 1994). If the early farming communities in southern Africa are organized according to the Village model, then there should be repetition of activity areas (see Huffman 1993; Whitelaw 1994). Each hypothesis presented above for EIA social organization will leave different archaeological residues assuming that there has been little spatial movement of remains from their original use context.

V. Methodology

A. Method

The method used in this investigation, to investigate where features and objects are located in the site, is spatial analysis. Spatial analysis is an analytical methodology for studying the spatial distribution of archaeological remains both within and between sites. It is most commonly used on a regional level for estimating and predicting the locations of archaeological sites, and on an intra-site level for interpreting and understanding the location and distribution of archaeological features and materials. The spatial structure of a site may be identified through study of the artifact and feature locations. From this, the social, economic and/or political structure of the society may be inferred (Beals et al. 1977).

B. Technique

A variety of techniques were used in the analysis. These included both qualitative and quantitative spatial techniques.

The first problem was to make the data from a variety of specialist analyses

compatible. Because each excavator collected and recorded their information in a different manner, all the data had to be made comparable. This required combining numerous files and making data entries, similar. These Excel spread sheets contained over thirty thousand lines of data. Each artifact or ecofacts required its own spatial coordinate to allow them to be analysed in terms of spatial context. This is the first step towards incorporating the data into a Geographic Information System (GIS) environment, a necessary precondition for evaluating the depositional context of the data.

The next problem to solve was to create standardized maps of the features found on the site. Various techniques were used to digitize maps from field notes and to plot the spatial distributions of remains. This was essential to identify spatial relationships between artifacts and activity areas.

C. Technology

The artifact data were manipulated in Excel spreadsheets. The maps were created using ArcView 3.2. It is a GIS software technology that is very appropriate for archaeological questions, such as intra-site analysis, because it has the capability to both digitize and analyze the data. ArcView provides all the requirements to accomplish an intra-site spatial analysis of archaeological data.

IV. Conclusion

Was the settlement of Ndondondwane, an EIA farming site, comprised of a single patrilocal polygnous family, and therefore should be termed a homestead, or were they occupied by several patrilocal polygnous families, and hence should be termed a village? This question has yet to be answered for EIA farming communities. Through the analysis of ceramics, settlement patterns, and other archaeological remains, archaeologists have attempted to identify the nature of the relationship between the modern and ancient

inhabitants of the region (Whitelaw 1994/5; Greenfield and van Schalkwyk 2003). Previous research on EIA settlements have not attempted to determine relationship between the inhabitants of the settlement. The present investigation provides archaeological evidence that better identifies if the settlement was a homestead or a village of one EIA farming community in southern Africa.

This investigation performs an intra-site spatial analysis on Ndondondwane an EIA village in South Africa to identify the village's internal structure (i.e. a homestead or a village). Ndondondwane will be used to test if the settlement is a homestead or village by analysis of the site spatial distribution of remains. Each of these forms of social organization has different archaeological implications and will present themselves differently in the archaeological record.

CHAPTER 2: SOCIAL SYSTEMS IN SOUTHERN AFRICA

"(the village) is merely an enlarged family: the headman and the old people who have fallen to his charge, his wives, his younger brothers and their wives, his married sons, his unmarried sons and daughter. All these people form a community whose life it is most interesting to study" (Junod 1962: 310).

I. Introduction

In order to reconstruct social organization from the spatial arrangement of archaeological data (features and artifacts) the difference between social organization, social structures and spatial structures must be understood (Huffman 2000; 15). All of these can be encompassed by the concept of social system. Since archaeological data cannot directly identify these theories, a review of each and its importance to the underlying nature of the thesis (social systems), will be discussed.

Social systems are composed of social organization and structure. The occupants of any community of agro-pastoralists are part of a complex social system. A system maybe defined as, "a complex set of interrelated parts, surrounded by a boundary, and existing in an environment" (Turner 1972: 3). In order to be part of a system, the parts must be interrelated. For example, changes in the status of a male will have repercussions for other members of the family.

Systems may also be bounded. That means they can be isolated from other systems. Yet, these boundaries may be permeable by other people or environments (e.g. Barth 1972). A social system is the continual replacement and maintenance of elements and components of a society (Goody 1969: 1). This process is achieved through the

continual processes of life and death. A person becomes part of the social system through their education of their culture, which in turn is passed on to future generations.

Social systems can be viewed structurally, through relationships or principles within the society, and processually through the actions, which maintain the organization. Beals et al. (1977: 423) write

> "thus a kin group such as a patrilineal clan can be viewed structurally, in terms of the relationships of descent which define each member's position within the clan, or it can be viewed processually, in terms of the behaviors expected from and/or exhibited by its membership".

Organization implies action/process, while structure implies form.

Shaw (1974: 85) identifies three types of domestic settlements found among the Bantu-speaking peoples in South Africa. These are the individual homestead, the village, and the town. The individual homestead is defined as at a distance from other homesteads, a village is a group of homesteads, and a town has greater complexity and size than a village. A homestead is a settlement occupied by a single patrilocal polygnous family (O'Leary 1983: 67). Villages are composed of several unrelated patrilocal polygnous families and are larger and more complex than homesteads. In this thesis, given the absence of towns in the EIA (Junod 1962; 126) our purpose is to try to distinguish between homestead and village. Essentially, is Ndondondwane a homestead or a village?

In order to determine if Ndondondwane was composed of one or more households, it would be beneficial to describe the relevant aspects of cultural systems in southern African societies.

II. Social organization of households in southern Africa

A. The domestic unit

The domestic unit is the basic building block of society. In southern African ethnography, the basic domestic unit is the patrilocal polygnous family (See Preston-Whyte 1974; Crandall 1996: 331-332). The patrilocal polygnous family is composed of a man and his wives. The wives and their children represent matrifocal units within the settlement. A domestic unit, in a worldly context, is defined as a unit within which daily activities are jointly (with other members of the community) carried out (Goody 1973: 251). The basic composition of this unit is a man and his wife (or wives) and their children. The patrilocal polygnous family is responsible for social reproduction. Because the patrilocal polygnous family goes through many temporal phases, it has been traditionally useful to describe it at various points in time. This provides a snapshot of the settlement's composition which otherwise a fluid process of changing roles and statuses (Goody 1973: 251). There also may be movement between settlements. This may be a function of, different variables, such as kinship, residence, etc. The social organization of households in ethnographic societies can be discussed in terms of their developmental cycle, kinship (descent), marriage, rank, and inheritance (Lowie 1948: 3).

1. The domestic cycle of the EIA in southern Africa

The development cycle is intrinsic to the social organization of the household. Residence patterns provide a basic outline of the boundaries of the internal structure of domestic groups (Fortes 1969: 3). They are, however, not a determining role in social

structure, rather a product of economic, affective and jural relations that spring from other factors in society. Forte (1969: 4) identifies several phases in the developmental cycle of domestic groups. The phases are not discrete, since some overlap can take place.

- The first phase is expansion, the period from the marriage to the end of the wife's childbearing years (c. 25-30 years).
- The second phase is dispersion. This phase begins with the marriage of the first-born and continues until all the children are married. This is a lengthy period of time, especially in a polygynous society, and can last for as long as forty years.
- The third phase is replacement. This phase begins with the death of the father and his replacement in the social structure by his son/s.

Fortes' model of household expansion, dispersion and replacement has been applied to a southern African context by Preston-Whyte (1974). In the initial phase (expansion), there is the public validation of the marriage by the passing of bride wealth and birth of the first child (Preston-Whyte 1974: 183). During this phase, the family may be independent but remains part of a previous generation's household. The new couple continues to be economically and physically dependent upon the husband's parents.

In the second phase, dispersion, the children are married off. Children are married off at a young age when women are able to begin to bear children. Women move to their husband's settlements, and therefore, the sons remain in their own settlement with their new wives. With patrilocality, the son's family remains part of his parental household. In this phase, the homestead begins to grow because it contains multiple patrilocal polygnous families. The sons continue to contribute to the parental patrilocal polygnous family as long as the patriarch is living (Preston-Whyte 1978: 184), while daughters from

other households are added as new brides to unmarried sons. This creates a numerous related (hence not a village) patrilocal polygnous families.

The last phase, replacement, begins with the patriarch's death; the sons are finally able to begin to move out and establish their own homesteads (Preston-Whyte 1978: 184). The eldest son may start his own homestead or become the new homestead or village leader. The cycle is repeated in each household and has consequence for the establishment of new settlements in southern Africa

2. Descent

All southern African tribes are patrilineal, and emphasize male authority (Hammond-Tooke 1974: 360). The patriline of genealogical seniority define the inheritance of property and succession to office. Individuals reckon descent lines through a male forbearer.

3. Marriage

Marriage is a formally expressed relationship between the husband and wife and introduces many legal responsibilities with little attention paid to the wife's emotional well being (Kuper 1960: 91). Although marriage based on communal interests does occur, there is a preference for marriage with matrilateral cross-cousins (Preston-Whyte 1974: 178). Brides leave their settlements to move in with their husbands, while the bride wealth brought in for the marriage is used to facilitate the marriage of males in the bride's family (Kuper 1982: 26). 4. Residence patterns

Residence patterns are shaped by the internal structure of domestic groups in terms of kinship, descent, and marriage (Goody 1969a: 3). After the marriage ceremony, the wife moves to the husband's village. If the marriage is to the village head, then

applications of the house-property system are implemented, which is discussed in greater detail below. If it is a son getting married, the wife moves to the male's home and becomes part of the homestead. If the husband's parents are alive, the newlyweds may build their hut within close vicinity to the other inhabitants of the settlement. If the husband already has multiple wives, the tendency is to subdivide the settlement into units of mothers and sons, as women always move with their sons (Kuper, H 1960: 90).

When other families not related to the headman move to the settlement, the homestead becomes a village. Or when the headman dies and the sons and their wives inherit the homestead.

5. Rank and inheritance

The house-property system, first identified by Gluckman (1950), involves " a system of property holding and inheritance in which all property held by a polygynous family is divided and held separately by the nuclear family, or 'house', of each wife" (Oboler 1994: 432). Customary law states that, the first-married wife ranks first (Kuper 1982: 29). It is assumed that the father provides the bride wealth for the son's first wife, who becomes the 'great wife' upon the son taking over his father's settlement or establishing his own.

Wives are ranked in order of seniority, with the great wife in control of the 'great house' and secondary wives receiving lesser houses. In many cases, only the initial two or three wives are established as household heads and the other wives are placed under their control (Kuper 1982: 29-31). Only upon the establishment of a new settlement or demise of the settlement head will the eldest son's wives become household heads. The ranking of wives affects the inheritance rights and shares of the property among their

children. Generally, the eldest son of the first wife inherits the majority of the estate. If there is no son of the first wife, then it progressively moves down the line of wife succession until an heir is found (Kuper 1982: 29).

Inheritance claims of the children are based on seniority and sex (Kuper, H 1960: 97). While the main heir, usually the eldest son of the patriarch, receives the largest amount of inheritance, he is still responsible for assisting his younger brothers in the same way as his father did.

6. House-property system

Current Bantu speakers utilize a House Property System within their village (Oboler 1994, Sansom 1974: 160). The House Property system is a specific arrangement reflecting the wider polygamous compound pattern found among cattle keeping societies in eastern and southeastern Africa. While the husband manages the homestead's herd (for him and his wives and children), each wife manages her own household (for her and her children). She is provided with a house, storage pit, hearth and domestic goods. In addition to the provided goods, the wife's household receives the products from its gardens, milk from its cows, and some bride wealth brought in by the daughters (Oboler 1994: 343; Kuper 1982: 28).

In southern African ethnography, there is no individual land ownership. Rather, the land belongs to the tribe as a whole and sections are allocated through the chief to individuals in the settlement. Hence, there are usufruct rights. The individual has rights over the land to the exclusion of others. That is to say, the land is not alienable by the individual, but the individual can take and own profit from the land (Oboler 1994: 345; Shaw 1974: 91).

7. Division of labour within households

Women's activities include both domestic and agricultural tasks (Oboler 1994: 342). Domestic activities include the preparation of food, cooking and grinding grain. They also produce domestic artifacts (pottery) and utensils and keep the home and its surroundings tidy. The wives look after the children; sometimes this duty is passed off on girls in the settlement. As young girls become older, they are expected to help their mother gather firewood and bring water to their home. Each wife cooks at her own hearth for the inhabitants of the hut. Women's labour was not just restricted to the inside of the hut (Sansom 1974: 158-159).

Women are responsible for the majority of the agricultural work. Although men help with the various jobs including harvesting, threshing and winnowing, the majority of the work was accomplished by women (Sanders 2000: 474). Men, however, do most of the clearing of new fields, tilling and sowing (Sansom 1974: 159). Once the grain is harvested, women and girls are responsible for the grinding of the grain into its different forms for cooking (Shaw 1974: 99).

Animal exploitation, public ritual, and metallurgy are traditional male domains. Most adult male activities are focused on domestic livestock management. They herd the animals, build the byre and butcher the animals. In southeastern Bantu belief systems, women are considered impure and may contaminate the byre area, and therefore are not permitted (Ngubane 1976). In general, young boys look after the milking and herding (Shaw 1974: 94). Both men and boys would be responsible for the production of clothes made from animal skins (Shaw 1974: 117).

Hunting also falls within the male domain. Hunting may occur to procure food for the settlement or to rid the area of dangerous or pestilent animals. Men are also responsible for their butchering and procurement of the skin for clothing (Shaw 1974: 117).

Ethnographically, there are two types of metal production, smelting and forging. Men conduct both. Smelting traditionally takes place outside of settlements, away from the prying eyes of women. Forging takes place within villages and can be done in places visible to both sexes. It mostly takes place in central areas, such as the kraal, but also may be done near domestic areas (Shaw 1974: 113-115).

The ethnographic literature demonstrates a strong association between gender and certain activities in the region. Through these associations, household tasks can be culturally allocated to each gender. Different parts of a homestead or settlement are gender specific in their associations (e.g. byre for men, left side of hut for women, right side of hut for men), therefore, men's and women's activities are often limited to specific areas of a settlement (e.g. Kent 1987; Oswald 1987).

B. Social structure of households

The social structure of the household is shaped by a variety of influences. These include the concepts of household production and control of resources, the house-property system and the division of labour within these households. The ethnographic literature provides the archaeologist with a preliminary understanding of social structure. These concepts and variables will be discussed below.

The difference between structure and organization is one similar to the difference between form and process. Structure is more of a static phenomenon, while organization

is an active phenomenon. A settlement in during the EIA can be broken down into a patrilocal polygnous families and the matrifocal unit (See above).

- Patrilocal polygnous family includes a husband and his wives. In essence, for a homestead, the whole settlement would be the patrilocal polygnous family. For a village, there would be more than one patrilocal polygnous family. The individual houses where the wives and children live have a different identification term.
- The matrifocal unit includes a wife and her children. It is represented physically as the wife's hut. A homestead has one matrifocal unit, while, there will be numerous matrifocal units in a village.

1. Household production and control of resources

Each matrifocal unit is in charge of agricultural production, crop storage, and daily consumption for its own members and is assigned a portion of the herd for its domestic and social needs (Sanson 1974: 158). The homestead head (who is in control of all the resources of the settlement) will often have control over a residual herd, which he can allocate both for his own marriages and for those of any sons for whom the household allotment may not be sufficient, and for sisters' sons.

Despite the subdivision of the homestead herd, it is physically kept together in a single central enclosure. Upon the death of the homestead head, the majority of his property is inherited by the eldest son who occupied the main house (Sansom 1974: 166). The eldest son may then start his own or become the new homestead head.

Certain activities will take place within limited spatial confines, while other activities may be less constrained in their distribution. For example, livestock typically are enclosed within a byre in the center of southern African communities during the night

in order to protect them from human and animal predators (Shaw 1974: 86). The combination of activity and their location within a settlement creates the site's spatial structure (Beals et al. 1977: 133).

2. Relationship between social and spatial structure in southern African societies

In southern Africa culture, the separation of male and female roles is manifest in the spatial organization. This plays itself out in terms of cultural distinctions between male and female areas of the settlement. The male area is usually in the center or inner zone which of the settlement and consists of the cattle byre and associated structures (e.g. a men's hut), which may be used for men to gather and confer. It is associated with head of the settlement, his sons and ancestors. The women's areas are confined to the outer ring of the settlement (Kuper 1993: 474). This occurs whether the settlement is occupied by a single (a homestead) or multiple (a village) households.

In the case of the homestead, the site is subdivided into households according to the number of wives a man marries. The homestead itself will be comprised of a man, his wives and their children (if the son's are married, the married couple are part of the homestead) (see Ruel 2000: 222). The ranking of wives is spatially represented in terms of the orientation of the huts. A developed horseshoe shaped homestead will be comprised of four or five main wives, each with their own hut, located in areas that denote their importance (Kuper 1993: 477). In the case of a village, the chief's hut is placed west of the cattle byre in the site, which usually is located at the highest point on the land. The spiritual elements of the settlement, such as graves, are located adjacent to the chief's hut. The other huts (female residences) are arranged in a semi-circular form around the central zone which contains a men' assembly area and cattle byre (Kuper

1993: 477). Men use their wives huts to sleep, moving from nightly from one wife to another. Women are not normally allowed to enter the cattle byre, because of its association with the male and agnatic principle in the community (Kuper 1993: 474).

Ideologically, settlements are effectively organized as homesteads. For example, at Ondini (see Mitchell 2002 for cultural-historic site sequencing) a settlement consisting of thousand people, was ideologically a homestead. But in reality, it was a village (or even a town) with several thousand people. The social organization is represented in the ideology (the homestead), while the social structure is the actual manifestation on the ground (village or town). Therefore, the ideology says you are living in a homestead, but the actual manifestation is a village (see Huffman 1993).

Huffman contrasts, a homestead vs. a village vs. a town. For example, he uses Tswana ethnography to describe towns and Nguni ethnography to describe homestead. Where you find larger aggregations of Zulus which become villages, they are ideologically still following the homestead model. Chiefly sites with courts, like KwaGanadaganda, are ideologically still homesteads. But, the settlement size has increased to include sons, their wives, numerous more distant relations, and numerous unrelated people. It is no longer a real homestead in terms of social structure; instead, it is a village with a head man who is also a regional chief.

3. Spatial structure of homesteads and villages

A homestead is when one household (or patrilocal polygnous family – husband and his wife/s) comprises the settlement. Kuper (1993: 473) writes "the convention is to speak of a polygynous 'homestead' organized into a set of semi-autonomous 'houses', each of which is established by a major wife of the homestead head". Each wife has her

own house, and they are usually located physically close to each other (Kuper 1982; Oswald 1987). Therefore, there may be more than one matrifocal unit in a homestead.

A village, in contrast, is composed of more than one household (see Sangmpam 1995: 617). Each household has its own compound, with a cluster of associated structures. The structures of different households are separated from those of neighboring households by space or by some other division (thicker walls, alleys, rubber tree fences, etc.) in more crowded villages. In cases where there are more widely spaced clusters of structures within the same village, these represent separate households (Flannery 1976:25).

Settlements, whether they are homesteads or villages, are usually formed around an elaborate kinship network. All of the domestic units tend to be related in southern African settlements (Kuper 1960: 91). As a result, it cannot be assumed that a settlement is limited to a single or multiple households. These must be demonstrated and identified.

Settlements may contain more than one byre. A secondary byre would house sheep and goats, known as small stock or sometimes be used to order the cattle before they entered the main byre (Hall 1984: 73). Generally, an indication of the difference between a homestead and a village is the number of byres. A homestead will have one cattle byre, while a village may have more than one with each byre being used by a different household (Oswald 1987). The presence of multiple byres may be an indication of a village pattern or it may indicate different animals are being housed in different enclosures (such as cattle in byre and sheep and goat in another). Therefore, other forms of data need to be used to identify the settlement organization.

4. Developmental cycle of settlements (homesteads and villages)

The initial inhabitants are a husband and his wife. At this point in the development cycle, as through all the cycles, there is a patrilocal polygnous family and matrifocal units. The rights of the house property system are in place and the settlement can begin to grow.

The second part of the development cycle of settlements is the addition of wives. More matrifocal units are added to the homestead and the settlement begins to spatially expand. As more wives are added and children are born the settlement hits it zenith.

The settlement begins its decline as the children begin to marry off. The males remain in their homestead, or start a homestead on their own. As the last of the children marry and move off, the homestead is eventually abandoned upon the death of the patriarch.

III. Identification of household units – archaeological considerations

For the identification of village or homestead to occur, people must be assigned to some kind of unit in order that they can be counted and the relationships between them studied. One must be sure not to reify the units as to give them overly concrete classifications. Goody (1973) works within these constraints, first, by identifying the criteria of a household and homestead, and second, by viewing the household and homestead as they related to other similar structures. However, if the problem is viewed archaeologically, unlike the analysis by Goody (1973), there are other considerations in analyses that will effect the final results.

Activities associated with different areas of a homestead will often but not always leave different archaeological residues (Flannery 1976; Oswald 1987; Kent 1998). As

discussed earlier, certain areas of the site were used for specific purposes (for example food is prepared and cooked inside or close to a wife's hut). However, there are other variations of homestead composition that cannot be easily identified with archaeological data. For example, one cannot distinguish between a homestead composed of a father, his wife, and two married sons (who have been given their own residences, since they married), and a homestead comprised of a father with three wives.

Given all the above, how would one distinguish between a homestead comprised of a father, his wives, and his two married sons from a village comprised of, say, three married men and their wives? Archaeologists have long attempted to resolve this question through the archaeological household cluster concept.

A. The household cluster concept

Flannery (1976) originally proposed the concept of a household cluster. He defined it as the abode and all surrounding activity or storage areas associated with the domestic unit (1976: 25). It includes areas for living, sleeping, food preparation, cooking, storage, burial, garbage disposal, etc. The archaeological 'household cluster' thus might include a number of different parts, representing different activity areas. These specialty areas will leave distinct material residue. In the subsequent sections, the various components of a household cluster are discussed.

1. The house

The essential feature around which a household cluster is formed is the abode or dwelling. The household may be composed of one or more structures, depending upon the size and nature of the household. Each structure may have similar range of activities. Although such basic needs as an area for sleeping can be assumed, other aspects should be considered. These include all aspects of the preparation and consumption of food, and

the production of specialty goods. Variations between remains of activities carried out in each dwelling can provide information about variation in subsistence, labour divisions, specialty activities, social status and so on (Flannery 1976: 16).

2. Middens

Middens can contain the greatest variety of artifacts at a site. Middens may contain evidence of activities carried out by the associated household cluster or clusters (e.g., identification of foods and other stored materials). Investigating these middens provides data on the household clusters' subsistence as well as other activities (O'Connell 1991:67).

3. Burials

Burials and the location of burials can provide information about the socio-economic organization of associated household clusters (Flannery 1976). Objects associated with the burials provide data on the social importance of an individual. The same can be said about where the person was buried (Fowler 2005 BAR monograph, Junod 1962; 141-142)

4. Storage

Storage of resources can occur in pits or above ground units. Grain and other foods are often stored for later use. Storage pits for food in South Africa are often dung lined to draw out moisture from the storage containers, which allows the product to be stored for a longer period of time.

5. Summary of archaeological indicators of activities in a household cluster

The types of activities in a household can generate specific archaeological indicators. They are most easily divided between features and artifacts. Each is

summarized next.

1. Features
    a. Residential structure – place to sleep and get out of the weather.
    b. Grain storage – It is postulated to take place within each domestic unit (above ground or pits).
    c. Cooking areas – hearths
    d. Garbage disposal – middens
    e. Ceramic production – open air fire pit with ceramic wasters
2. Artifacts
    a. Repair of metal items – Forging.
    b. Ceramic production – ceramic wasters.
    c. Grain processing – grinding stones.
    d. Clothing manufacture and repair – awls and needles.
    e. Diet – plant and animal remains should be present and similar between households.

All of these can be used in conjunction to identify whether groups (clusters) of features represent a single or multiple household. Some of these will be used in the method chapter to devise testable hypotheses for distinguishing between homesteads and villages and will subsequently be applied against the data from Ndondondwane in the analysis chapter.

Flannery assumes that the household is coincident with the household cluster. The household cluster is the archaeological manifestation of the behavioral household. But he does not define the nature of the household. In southern African ethnography, the term

household is used to reflect the matrifocal unit. But, Flannery makes the implicit assumption that the household represents the patrilocal unit, or compound, since he is writing about Mesoamerican villages. As a result, the concept as originally presented is somewhat at odds with its use in a southern African context. In southern Africa, because of the practice of polygamy, each wife has her own house and storage facilities. These would be interpreted as separate matrifocal unit clusters in Flannery's model. While they are separate households, they are linked into a single patrilocal polygnous family, which retains some of the characteristics of the household cluster concept. Hence, the different household levels are somewhat at odds with the application of the household cluster concept in southern Africa.

In sum, Flannery assumes that household clusters share resources within the household, whether labor or objects. As a result, he further assumes that each household will be autonomous in terms of the means of production (to the extent that we can perceive such things archaeologically).

How does one use the household cluster concept to distinguish between matrifocal and patrilocal levels of household integration? The matrifocal unit is defined as the wife and her children. The matrifocal unit cluster includes her delegated living space and associated activity areas. The patrilocal unit encompasses the matrifocal unit with the inclusion of the patriarch. This integration of the matrifocal unit leads to the patriarch led polygnous family.

IV. hypothesis- How to distinguish whether site is one or more households

Archaeologists test hypothesis about prehistoric people's behaviour observations predicted patterning in archaeological residues (Smith 1977:602). Cannon (1983: 785)

argues that if there is consistency of the relationship between hypothesized behaviour and it's archaeological residues determines, in part, the importance of the implications as proof in inductive confirmation of the presence of the behaviour. The hypothesis is as follows:

1. If several patrilocal polygnous families (i.e. a village), expect replication of means of production and clustering of features and artifacts for each domestic area.
    a. Support
        i. Likely to have clusters of households widely spaced apart.
        ii. Multiple livestock enlosures (for both small and large stock) representing multiple household heads.
        iii. Metal production occurs in conjuction with each cattle byre.
        iv. Storage activites found in each domestic area (each matrifocal unit).
    b. Against
        i. A single cattle byre
            1. Metal production occurs only in a single byre
        ii. A single area (domestic residence) of clustering of artifacts and features
2. If a single patrilocal polygnous family (i.e. a homestead), expect single occurrences of activity areas (hence, only a single cluster of artifacts and features)
    a. Support

i. A single livestock enclosure (containing both small and large stock animals)1. Metal production in a single livestock enclsure.ii. lack of clusters of abodes spaced widely apart

b. Against

i. Multiple livestock enclosures

1. Metal production found in conjunction with each livestock enclosure

ii. Clusters of abodes found widely spaced apart

The household cluster concept has long provided a useful tool to identify a functioning household unit. It is a useful model for uncovering the spatial structure of an archaeological settlement. Once the units that comprise the household cluster can be identified, then these activity areas can be applied to archaeological features to identify the spatial structure of a settlement.

V. Conclusion

In a southern African context, the homestead can be identified through a patrilocal polygnous family and matrifocal unit. The matrifocal units include a wife, her children and associated living and work space. The patrilocal polygnous family includes all his wive's (or wife's) matrifocal units and areas designated as the village leaders (i.e. the cattle byre, men's hut)

Throughout a settlements development cycle, new matrifocal unit are added to the patrilocal polygnous family as the patriarch takes on more wives. As children are born,

the settlement becomes larger requiring more space for daily activities. Once the children are of marrying age, they begin to leave the settlement (women, move to their husband home), start their own settlements (males have the opportunity to do so) or in the case of males, move back to their fathers compound. Once the patriarch dies, the homestead is abandon and the male sons start their own settlements.

The spatial structure of a site can be investigated through the distribution of artifacts, features, and other archaeological materials left behind by its prehistoric inhabitants. In agricultural societies, the village site often represents a community. An understanding of the social structure of a community may be attained by mapping and identifying the spatial structure of a given settlement (Beals et al. 1977: 135). This can lead to a preliminary understanding of the social organization of an archaeological site. While spatial structure can be surmised archaeologically, social structure can be archaeologically reconstructed by testing the spatial structure against models often generated through ethnographic data.

The goal of this thesis is to test this concept against archaeological data from the EIA. For example, is the settlement at Ndondondwane composed of a single patrilocal polygnous family (and thereby becomes a homestead) or is it composed of several unrelated patrilocal polygnous families (and is therefore a village). This investigation will provide archaeological evidence that better identifies the social structure of EIA farming communities in southern Africa.

CHAPTER 3: THE EARLY IRON AGE OF SOUTHERN AFRICA

I. Introduction

Until 100 AD, southern Africans lived as nomadic hunter-gatherers in small groups with low population densities. Around 100 AD, early farming cultures and early iron users began to spread throughout southern Africa. This movement was the beginning of the EIA (250-1100 AD) south of the Zambezi River.

The origin of the EIA in southern Africa lies in western Africa and is part of the expansion of Bantu culture out of the latter region. EIA farmers were speakers of the Bantu language family (Vogel 1997: 410-411). Bantu is a group of closely related languages and represents the largest linguistic family in Africa (Vogel 1997: 167). The Bantu speaking communities expanded out of Cameroon (Vansina 1984), moved southwards and eventually entered into southern Africa in two streams: one via the east coast and the other through the interior (Huffman 1993; Lane 1998; Whitelaw 1994; see Robertson and Bradley 2000 for alternate proposition).

The inhabitants of Ndondondwane (the site examined in this thesis) are believed to be Bantu speakers (Whitelaw 1997). The inhabitants of Ndondondwane left archaeological remains in the form of ecofacts, features and artifacts. These remains are similar to those found in other EIA settlements in the region. In this chapter, the culture historical record of the EIA of the region will be summarized.

II. Early Iron Age cultures and the spread of Bantu speakers

Current day Cameroon is believed to be the geographic origins of the Bantu-speaking peoples. The Bantu language is classified into groups that have eastern and western streams based on linguistic variation. Eastern Bantu speakers are found in the

savannas of eastern and southeastern Africa. Western speakers are located in the forested regions of central Africa and areas to the southwest of the Kalahari. Based on similarities between dialects, words and grammar, it is speculated that the separation between these two subfamilies was relatively recent (Vansina 1998; Vogel 1997; Whitelaw 1997). Both eastern and western streams originated in Cameroon.

The archaeological cultures (and the peoples which they represent) found in the eastern edge of western Africa (Cameroon) are thought to be the remains of the ancestors of modern Bantu speakers (Vogel 1997). It has been suggested that the movement of the earliest Bantu-speakers out of current day Cameroon was sparked by an agricultural and technological revolution in the region (Phillipson 1985: 171; Vogel 1997). The advent of an iron technology and the shift to food production through slash and burn agriculture appears to have stimulated population growth and consequent population movement out of the region. The movement of these people has been traced by both linguistic and archaeological evidence (Vansina 1998; Huffman 1993).

Those who lived at Ndondondwane are believed to be descendents from the eastern stream (Vasnia 1998.).

III. Settlement archaeology

A. Settlement size and regional settlement patterns

The size of a settlement may represent how many inhabitants lived there. There are both large and small EIA sites. Most are small (van Schalkwyk 1991) and range in size up to 5 ha. Large sites range up to 10 ha in size. Two of the best-known examples are KwaGandaganda and Broederstroom, which are deemed by the excavators to be villages. They had site size of 250m by 320m and, 350m by 400m, respectively (Huffman 1993; Whitelaw 1994). However, not all large sites are large settlements. For example,

Ndondondwane is considered to be a large site when its entire spatial extent is included (Loubser 1993; van Schalkwyk 1991). However, when it is broken down into extent of each phase of occupation, it is much smaller. At its largest, it is only 4 ha or 200m by 200m (Greenfield 2005) as can be determined by the artifact scatters and features located (see Widlok 1999: 392-394 for a discussion of artifacts and feature scatter site identification). In fact, it is much smaller in separate horizons of occupation. However, none of the settlements in the region have been subjected to a similar detailed chronological analysis. More analysis on the subject is required to determine average settlement size in the region.

B. Architecture

Three kinds of structures were constructed of pole and wattle, with *daga* (daub) covering the frame – huts, granaries and furnaces (Maggs 1989). Daga is a mixture of mud and dung used to solidify floor and walls. The floors of both were made of daga, often mixed with dung. Wall posts were connected with horizontally placed twigs and bark, while grasses filled the open spaces (Vogel 1997).

1. Huts

The huts are circular in plan (van Schalkwyk et al. 1997). Huts are usually about 4m wide. Kuper (1980) identifies the rear of the buildings ethnographically, as being raised above ground, which indicates a sacred associated with ancestors. However, no raised areas were found in the huts at Ndondondwane.

2. Granaries/Storage pits

In southern African archaeology, granaries are found as either above ground structures or dung lined storage pits (Hammond-Tooke 1974: 145).

The above ground storage units are composed of the same materials as the huts.

However, with frequent burnings of the granaries to rid them of insects and other invaders, the daga becomes baked very hard. This daga is identifiable as granary daga based on its composition. At Broederstroom, there is evidence of granaries raised up off the ground on lines of stones (Huffman 1993: 222). However, most huts are built on the ground (Huffman 1993: 222). In granaries, the walls were plastered with daga, possibly only on the inside (Vogel 1997).

Storage pits are dung lined to keep moisture content down. Grain was the main resource stored in above ground granaries and below ground pits (Shaw 1974:87). Due to climactic conditions, grain could only be stored for a season or two (Sansom 1974: 158)

3. Iron smelting furnaces and forges

Furnaces are used to smelt the iron ore into an alloy of carbon and iron. Forges are used to repair and modify iron impliments. The manufacturing and use process of furnaces and forges creates distinct daga signatures, which allow them to be identified (Huffman 1990; Miller 1994; Greenfield and Miller 2004; Whitelaw 1994). Smelters are found in association with the central livestock enclsure and may be located around more public (periphery) areas of the settlement. At Ndondondwane, furnaces post-date the occupation.

4. Byres

Byres can range up to twenty-five meters in diameter. Byres are ivestock enclosures, and may contain either largestock (cattle) ot smallstock (sheep and goats) or both. Byres have posts located around the enclosure to keep the animals contained. They are identified archaeology by these remains of the posts (postholes) and high concentrations of dung. Ethnographic analogy shows that they were used for keeping

cattle, sheep and goat. They occur widely on sites of this period (Huffman 1990, 1993; Whitelaw 1994/5, 2005).

Ethnographically, large (cattle) and small (sheep, goat) livestock are commonly separated. Calves may be separated from adult cattle. Every homestead will have at least one livestock enclosure (sheep and goats are sometimes kept separately), unless particular historical and social circumstances dictate otherwise (e.g. times of social and/or economic stress – such as the *Mfecane*). Often where modern families do not have any livestock, a symbolic space is set aside for a cattle byre or is recreated for ritual purposes (see Huffman 1990 and Whitelaw 1994/5 for example.). More than one byre may occur when cattle from different agnatic units within a settlement are kept separate, (Shaw 1974: 86). However, this does not always occur, which means that a village may have a single byre or more than one. The specific organization of livestock pens is determined by local cultural practices. Therefore, multiple byres may not be a reliable indicator of whether a settlement is a homestead or a village, and this will be discussed more extensively in chapter 5.

C. Artifacts

Commonly excavated artifacts found in southern African sites include pottery, daga and metal materials. Each will be discussed below.

1. Pottery

Pottery during the EIA has many functional uses. However, they are mostly associated with food preparation and consumption (Hall 1986).

Decorations on the pottery have been used to create a cultural sequence for Southern Africa. Because of the vast amount of information and variables found from site to site, multivariate techniques are used in South Africa to characterize assemblages.

Huffman (1980) designed a multidimensional typology that created types through the intersection of vessel profile, decoration and decoration layout. Seriated sequences have been used to show the spread of EIA Bantu speaker farmers into South Africa. Huffman writes (1978:2) "Iron Age cultures are largely defined by ceramics because no other artifact category occurs in such profusion exhibits as much variability and is influenced to the same degree by idiosyncratic behaviour". There are three major EIA ceramic phases within the valley and neighboring regions of KwaZulu-Natal. The Msuluzi (600-780 AD) is the earliest, followed by the Ndondondwane phase (780-970 AD), and then by the Ntshekane (970-1050 AD) phase (Maggs 1984a; Van Schalkwyk et al. 1997; Whitelaw 1996).

2. Shell

Several types of shells are often found in sites. Ostrich eggshells, *Metachatina kraussi (African snail)* and Achatina immaculata are the most common. They are modified to serve as beads used in body ornaments.

3. Metal

The chronology of the origins of iron working is still under debate (Hall 1986:160). However, it is believed that iron working was linked to the spread of agriculture. The metal instruments (i.e. hoe) made farming more practical (Hall 1987). The bloomery process was the method of Iron working used in South Africa. This would entail metal smiths creating a cylindrical furnace that included fired clay pipes used to introduce air into the system. Iron ore and charcoal were added to the furnace at 120° C the iron was then separated from the waste material and moved to a forge (Miller and

Greenfield 2004). Archaeological remains of this production process include slag (the impurities found in the raw ore) and daga (from the furnace).

4. Worked bone

Two different classes of bone tools were found at Ndondondwane; awls and needles. Both artifacts types contain similarities, however are different in size and stature, each has been polished and finished.

5. Artifacts related to Exchange

The amount of 'foreign' artifacts may also indicate a village's status within a regional polity. A polity is a region designated by a similar and interrelated political system. That is to say, a definition of polity is, "those social units with formal political structure" (Barnes 1986: 82) or is "reserved for the highest politically autonomous unit" (Renfrew 1986: 4).

Ostrich eggshell beads were traded to solidify bonds between agriculturalists and hunter-gatherers (Maggs 1980, Mazel 1989). The proportion of ostrich shell beads to disc-beads may be an indication of the amount of interaction between these two groups. Therefore, places of high importance would contain large amounts of beads in comparison to villages of less political influence (Whitelaw 1994-95). There is no evidence, however, of trade between Bantu speaking groups during the EIA (see van Schalkwyk 1994: 95); most production was for local use. A large amount of unworked ivory was found in the Mound Area. However, only small quantities of worked ivory were found at Ndondondwane, as compared to other sites (see Voigt 1983). At Ndondondwane, this may indicate a lack of trade, which would fit the history of the area as large-scale trade does not begin until the arrival of the Arabs around 1000 A.D (Voigt

1983: 79). The amount of ivory debris at sites during the EIA may be an indicator of a site's political importance (Whitelaw 1994/5). In the recent past, only politically important villages controlled the ivory trade as part of a method to perpetuate the importance of the political leaders. Therefore, one cannot assume that ivory will be found in an area that is plentiful with elephants. Ivory represents both an economic and social commodity. It is possible that in the EIA, the quantity of ivory remains would indicate a site's relative importance in a regional hierarchy. At KwaGandaganda, Whitelaw argues that the large quantity of ivory relative to sites in the surrounding region signaled that this was the locus of a chiefly residence (Whitelaw 1995; 53).

IV. Subsistence during the EIA

The subsistence base of the EIA economy was focused upon agricultural production, and the food was largely composed of domestic plants and animals. This can be seen in both the locating of villages amidst highly fertile soils and the overwhelming numbers of remains of domestic animals and cultivated crops. Most, if not all, of the sites of this period in central and southern Africa have yielded such evidence.

A. Botanical Remains

Plant remains have been found at a number of sites through the region (e.g. van Schalkwyk 1993; Huffman 1993; Maggs 1984). In addition, artifacts such as iron hoes and grindstones are ubiquitous on sites. All of these attest to the evidence of cultivated cereals and other edible plants (Miller and Greenfield 2004; van Schalkwyk 1991).

Other plant remains include charcoalized wood. Charcoal was created to lighten a load of wood for transportation that would eventually be used for fuel. It may also be found near hearths or structures that burned down.

B. Faunal Remains

The archaeological remains of cattle byres attest to the fact that the inhabitants of Ndondondwane kept a domestic stock of cattle. The domestic stock provides an immediate food resource, where animals can wait before they are processed or traded (Voigt 1984).

Faunal remains include the bones left over after processing and consuming of meat and bone worked into tools. These are the two main types of faunal remains found in South African sites.

The people of Ndondondwane were agriculturalists who practiced agriculture and animal husbandry. Large amounts of cow and sheep/goat have been found at Ndondondwane suggesting that these foods were staples as meat and as dairy products.

Animal bone remains are commonly found and recovered on EIA sites. The faunal remains indicate an overwhelming dependence upon domestic animals for subsistence (e.g. Voigt and von den Driesch 1984).

The quality of the samples varies depending upon the recovery techniques. As found at Broederstroom (Huffman 1993), there are more sheep remains than goat, while goat and sheep together outnumber the amount of cattle remains. Other domestic animals include dog and chickens, which are typical faunal remains found at EIA sites (Voigt and von den Driesch 1984). Wild animal remains are rare in most sites, (except coastal middens) and usually are found in the 'central' part of settlement. This may possibly indicate the animals were used for ritual ceremonies or used to elevate or maintain status (Junod 1962: 56).

V. Conclusion

The EIA of southern Africa was initiated by the migration of Bantu speakers from

western to southern sub-Saharan Africa. This movement can be broken down into two streams, a western and eastern stream. The movement of these people is traced through the development of their language and through the material culture they left behind.

The EIA southern African person's material culture included ecofacts, distinct architecture and a variety of artifacts. Ecofacts include botanical and faunal remains and provide insight into the types of foods consumed during the EIA. We have also seen that there are a few factors, which indicate the relative political importance of a site, these include foreign artifacts such as ivory. Southern Africa architecture is seen in the construction of huts and above ground granaries. Identification of these features is important to ascertain settlement density. In combination with these features, the artifacts found on the site will also help in the analysis. The next chapter will examine the archaeological features and artifacts found at Ndondondwane.

CHAPTER 4: THE SITE

I. South Africa

South Africa is made up of nine provinces, the Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Mpumalanga, North-West, Northern Cape, Northern Province and Western Cape (Figure 2). The provinces are divided along political and natural boundaries. Before the elections in 1994, the boundaries of the various provinces were largely dependant upon historical variables (such as the form of early colonies or states) and were modified along the lines stipulated by the Apartheid policies of the earlier governments. The boundaries seen in figure 1 represent the current boundaries found today.

A. Province of KwaZulu-Natal

The province of KwaZulu-Natal lies along the eastern seaboard of South Africa. It is an amalgamation of the old province of Natal and the Zulu homeland. It is divided into four, southwest to northeast oriented physiographic and environmental regions (coast, middleveld, highveld, and Drakensberg). These areas rise in elevation moving from the coast towards the interior, in the same order. Numerous east-west flowing rivers divide each of these regions, creating linear areas of similar physiography and environment. The Thukela Valley is one of these linear river basins.

The Thukela River flows east-west through Natal, as it did during the EIA. The Thukela valley can be easily divided into an upper and lower basin respectively referred to as the Upper and Lower Thukela valleys. The Lower Thukela Valley begins at Jamison's Drift and extends to the sea. The archaeological site of Ndondondwane is located in the lower Thukela valley (van Schalkwyk et al. 1997).

The site of Ndondondwane is located in the middle basin, between Jameson's Drift and the coastal plain of the Thukela River valley. Ndondondwane is located on a low flat terrace above the river, one of the few large level areas in the valley. The edges of the lower valley are steep escarpments that rapidly rise about 300m above the valley floor. The valley floor and the sides of the escarpment are arid and contain scattered vegetation. The land at the top of the escarpment, known as the upper valley, experiences increased precipitation and has more lush vegetation. The Thukela valley consists of highly fertile, arable, but relatively dry soils. This is a characteristic location of early farming communities (Maggs 1984a, 1984b).

B. Climate

Today, as during the EIA, the South African climate is dominated by seasonal precipitation regimes. The southeastern coast of South Africa receives the largest amount of rainfall in all of southern Africa. Rainfall mostly occurs during the summer months between October and March. Southern Africa typically has hot, wet summers occurring from October to March and dry cool summers from April to September. This type of climate is ideal for the cultivation of cereals and year-round grazing of animals.

II. The Site

A. Location

Ndondondwane is located on the floor of the middle basin of the Lower Thukela valley, on the left bank of the Thukela River (Figure 3). It is in the Magisterial District of Nkandla, in the locality of Middledrift. The longitude and latitude of the site are 29° 02' 52.71'' S and 31° 11' 03.17'' E. (Google Maps). The size of Ndondondwane is 100m by (with lots of empty space).

B. Chronology

Ndondondwane is located, as are all known contemporaneous EIA villages in the region, on a relatively flat alluvial terrace above the floodplain of the Thukela River. There is no evidence for substantial down slope movement, as result. Because of the relatively short span of occupation at Ndondondwane (less than 100 years), the distribution of sub-surface artifacts, those not disturbed by plowing, have had little disturbance since their deposition. Although, there has been some movement caused by anthill building (Fowler et al. 2000, 2004), most of the artifacts are found close to the original area of deposition. Because the large frequencies and volumes of artifacts over large areas are used to identify activity patterns, small spatial displacements would not affect the analysis.

Ndondondwane was occupied during the EIA of South Africa. It is the type-site for the Ndondondwane sub phase (700-900 AD) of the EIA sequence of KwaZulu-Natal. Radiocarbon dating from Ndondondwane has provided an uncalibrated date of 650 to 750 AD while the calibrated date is AD 879-892 ± 50 years (Whitelaw and Moon 1996).

It is an ideal site to identify spatial organization due to its short duration of occupation (Van Schalkwyk et al. 1997). Van Schalkwyk, Greenfield and Jongsma (1997) believe that Ndondondwane was probably occupied for about 30-50 years, while Loubser (1993) has placed the length of occupation at around a century. Two radiocarbon dates are available from the Lower (Horizon 1) and Middle (Horizon 2) of the Mound area. Horizon 1 was dated to AD 879, while Horizon 2 had a date of AD 892 (Maggs 1984). Loubser based his occupation estimate on data from the Mound and Dung Areas The Greenfield team used this information and the data collected from the other areas of

the site to refine the estimate of occupation. Since, Ndondondwane was only inhabited for a short amount of time, the artifacts and features can provide a 'snapshot' of the cultural material found at an EIA village (van Schalkwyk et al. 1997).

C. History of research

Three main groups of archaeologists have carried out the excavations at Ndondondwane since the late 1970s, beginning with Tim Maggs' work in 1978. Maggs' excavations helped to provide vital information on subsistence and reform the cultural sequence of the region (Maggs 1984). In 1982, excavations were re-opened by J.H.N Loubser, who extended Maggs' excavations and identified new activity areas at the site (Loubser 1993). In 1995, the team of Len O. Van Schalkwyk, Haskel Greenfield and Tina Jongsma once again reinitiated excavations. They worked at the site for three seasons, until 1997.

Each team of archaeologists brought to their excavation a unique method and ideology. Maggs' goal was to define the regional culture history. Lousber's goal was to define the nature of the Mound Area at the site, while Greenfield, van Schalkwyk and Jongsma's goal was to "increase our understanding of the intra-settlement economic and social organization of the EIA communities in South Africa" (Van Schalkwyk et al. 1997). For the purposes of this thesis, data recovered from each team of excavators are used in the analysis.

1. Maggs' 1978 excavations

After an initial survey of the site, Maggs (1984b) began his excavations on a large mound, still known as the Mound Area of the site. The mound contained a variety of cultural debris including ore, ivory and ritual activity materials. One outcome of Maggs'

research was to create a cultural historic sequence for this part of South Africa. Therefore, he was interested in incorporating the ceramic data from Ndondondwane into the KwaZulu-Natal regional ceramic sequence. The ceramic information led Maggs to believe that he had located a site that fit between Msuluzi cultural phase (AD 500-700) and the Ntshekane cultural phase (AD 900-1100) of the area, and he used the data to define the intermediate Ndondondwane phase.

2. Loubser 1982-3 excavations

Based on the importance of the site and the proposed building of a dam that would flood the area, Loubser (1993) began excavations once again at Ndondondwane in 1982. He extended the area excavated by Maggs and eventually fully excavated the Mound Area. From his research, Loubser was able to show how the mound was created through a series of activities that included hut construction, ivory working and ritual activities (Loubser 1993). Through extensive sampling of soil coring, and test trenches, he was able to identify two additional areas, the Dung Area and Midden 2 (previously known as the Daga Area).

3. Van Schalkwyk, Greenfield, and Jongsma's 1995-1997 field research

Van Schalkwyk, Greenfield and Jongsma excavated at Ndondondwane from 1995 to 1997. The goal of their research was to examine the social and political organization of EIA communities and they used Ndondondwane as an example (van Schalkwyk et al. 1997).

The research methods used by this team included topographic survey, geographical survey and surface scatter survey, as well as excavation. These initial

surveys created sufficient quantitative data to enable interpretation of identified surface concentrations. From the data, the van Schalkwyk team was able to excavate in the most promising areas, and expand excavations to new areas of the site.

By 1997, several new areas at the site were identified, and old and new areas were tested. Areas excavated included the Dung Area, Transect 1 and 2, Charcoal Preparation Area, Pumphouse Area, and Midden 1, 2 and 3. Each area yielded distinctive artifacts and features that allowed for initial speculation on which activities were associated with each area. The Van Schalkwyk research identified Ndondondwane as a well-ordered community, meaning that activity areas and features were found grouped together in a systematic way. They were able to identify specific activity areas that could be attributed to gender-specific activities through ethnographic parallels. Van Schalkwyk et al. (1997: 74) write,

> "this spatial distribution of activity areas appears to tentatively support Huffman's Central Cattle Pattern model (1993) for the Early Iron Age in its broad outlines – with a central area dominated by male activities (cattle keeping, iron production), surrounded by a plethora of domestic (female focused) compounds".

However, they also assert (Greenfield and van Schalkwyk 2003: 124) that although isolated features of the Central Cattle Pattern model are present (the byre, pits, houses, etc) other remnants of material culture did not fit their test implications in relation to proposed pattern. Only elements of the model were present and no conclusive finding could designate the spatial patterning as being the CCP. The problem was that the Greenfield team initially presupposed certain aspects of spatial relations between the

tenants of Ndondondwane. When these presuppositions were discounted, they could not conclusively identify the spatial patterning as being the CCP.

III. Phases of occupation – major activity areas

There have been three separate phases of occupation and abandonment activities identified at Ndondondwane. The Pan-site horizons are partly based on the stratigraphic and ceramic micro-seriation analysis at the site. The horizons and their archaeological manifestations are described in detail below.

A. Pan Site Horizon 1 (Lower)

Phase 1 represents the initial occupation of the site. This horizon is found only in the central zone of what later becomes a larger settlement. Phase 1 is found archaeologically in the earliest stratum in the Mound Area, Transect 1, Transect 2 and the Dung Area (Figure 4). A map of each area can be found in the Appendix. It should be noted, that for this horizon, the center point of the unit was recorded for each artifact found in the pit. Therefore, each point may represent more than one artifact.

1. Mound area

Between 1978 and 1982, Maggs and Loubser fully excavated the Mound Area. Greenfield has used data from the areas around the Mound Area to propose a new and simplified stratigraphic sequence for the zone. According to his analysis, the Mound area contains three major stratigraphic horizons (following Greenfield n.d.; Miller and Greenfield 2004). The horizons were distinguished based upon the various unique lenses of soil and other layers of ash.

Pan Site Horizon 1 contained evidence of living space (2 hut floors), a stone concentration (unknown use), and evidence of cooking (a hearth) (Figure 5). These are described below.

a. Hut floors

Two hut floors were identified through high concentrations of pole-impressed daga within Pan Site Horizon 1 in the Mound Area. Hut 1, had a diameter of 4m and found in unit E9. Hut 2, found in the southeast corner of the Mound Area was probably used during this horizon. This hut floor contained substantial amounts of ash, charcoal, and fired Daga. It is believed this hut that burnt down during this early horizon

b. Stone concentration

A stone concentration, 1m in diameter was found in unit H11 and G11. Loubser attributed this pile as being contemporary with the hut floor (Loubser 1993: 114). It is unknown to what purpose the stone pile served (van Schalkwyk et al. 1997).

c. Cooking (hearth)

An open air cooking fire was found in unit C10 (van Schalkwyk et al. 1997). A one-meter wide stone concentration was excavated just north of the hearth.

2. Transect 1

Excavation in Transect 1 was initiated to test whether there was any material in between the Mound and Dung Areas (Figure 6). Transect 1 consisted of a series of test squares, which eventually yielded a stratigraphic scheme, similar to that of the rest of the central area of the site (van Schalkwyk et al. 1997).

In Pan Site Horizon 1, there is evidence of living space (hut floor), and artifacts relating to food processing (upper and lower grinders) and food storage or preparation (ceramic vessels). Very few other artifacts were located in this area. The van Schalkwyk team surmised that this area was formerly the men's hut. They write (van Schalkwyk et al. 1997: 69),

> "it is hypothesized that this is the remains of a men's hut based upon its proximity to the iron working areas and the byre, the presence of iron tool sharpening stones, ceramic used mostly for vessels for eating and drinking, and its restricted location with respect to other identified domestic complexes".

In their recent reanalysis, they propose that this was the founder's hut for the site since it appears to be one of only three huts in the earliest horizons at the site (Greenfield and van Schalkwyk n.d.).

a. Hut floor

The burnt hut floor is associated with Pan Site Horizon 1. The hut floor can be identified as a flat surface with a width of about 2.5m, if this was a granary, the floor would have a smaller width. The daga towards the outside of the floor and its very center was highly oxidized indicating that it was baked at a high temperature. This contrasts with the floor found between the center and the edges of the hut, which was not heated as thoroughly. This was probably due to the how the hut burned down, with the hottest parts of the fire occurring towards the center and edges of the hut. There was a central posthole, and thatch impressions upon the burned daga floor. Van Schalkwyk et al.

(1997) suspect that this was a dome-shaped superstructure that burned down, intensely heated, and thus preserved, the floor.

b. Open space

The areas to the north and south of the hut were excavated. This space was largely devoid of artefacts, 10m in either direction. The excavations of Transect 2 to the east indicate a light random scatter of artefacts, ash and charcoal, but no high concentrations. The door of the hut probably faced toward the river. An associated midden was not found in any of the other excavated areas, however it may have occurred to the west and eroded into the river's sandy edge.

3. Transect 2

Excavations in Transect 2 were initiated by the van Schalkwyk (1997) team to further test their hypothesis that nothing would be found between the Dung and Mound Areas. Transect 2 is located just east of Transect 1 (Figure 6). This was an area that was supposedly devoid of artifacts. However, after an extensive surface collection, coring and conductivity tests, it became clear that there were some subsurface cultural materials. Hence, excavations were begun in Transect 2. Pan Site Horizon 1 in Transect 2 contained no features and only a light and random scattering of artifacts.

4. Dung Area

This area was first excavated in 1978 and completely excavated in the 1982-3 field season (see Maggs 1984b; Loubser 1993) (Figure 7). It was identified as the cattle byre due to the high concentrations of dung and ash. In villages today in southern Africa, ash and waste are dumped in the cattle byre due to spiritual beliefs that place a high value

on the importance of the cattle byre and its protective values (Kuper 1982). There is evidence of living space (a hut floor), iron working (forge), cattle keeping (byre), and refuse disposal (midden). Artifacts located include substantial ceramic sherds and faunal samples and evidence of iron-forging, and cooking fires. The Dung Area roughly covers a 120m^2 area.

The stratigraphy is different from the eastern and western areas of the Dung Area. The eastern half contains artefacts attributed to humans (a hut floor), while the western area indicates more usage that is animal (cattle byre). These two sub-areas within the Dung area will be discussed separately.

a. Human Activity Zone

Three stratigraphic layers could be identified in these trenches. They were divided up into Lower (Site Horizon 1), Middle (Horizon 2) and Upper (Horizon 3) Horizons.

The colour and texture of the soil that composed the layers of the Horizons provides clues as to the types of activities that occurred in this area. The layers increasingly become darker the older the deposits become. This is because of the charcoal content in the layer. There is the most charcoal found in the Lower Horizon, some flecks in the Middle Horizon and none in the Upper Horizon. The amount of charcoal in the soil may represent the amount of wood burning over time (Greenfield and van Schalkwyk 2003). The stratigraphy indicates that early during the site's occupation, wood was being burnt into charcoal, while the wood is being burnt to a fine ash towards the end of the occupation. This may represent deforestation and therefore lack of wood from the surrounding area over time.

The high concentration of ash and charcoal found in Pan Site Horizon 1 is related to the forge found in the units Q6-7.

A hut floor center was found in unit T8. The floor is associated with the group that first inhabited the site.

b. Livestock Zone

Loubser (1993) divided the Dung stratigraphy into an Upper Loose dung and Lower Compact dung. The Lower Compact Dung was between 5cm to 10cm in thickness. It was hard to the touch and had a very tough surface. There was a channel cut through the hardened surface found extending from T1 to U2. There were holes, believed to be postholes used to posts around the enclosure (Loubser 1993: 122) were found in the channel at regular intervals. The Upper Loose dung was soft and had a thickness ranging from 10cms to 25cms. This layer also contained the holes and some preserved wood within the depressions. Today, these horizons are known as the Upper Loose and Dung Horizons.

Van Schalkwyk et al. (1997) found a very different situation in the livestock zone. Beneath Loubser's Loose and Compact Dung Horizons, they found another set of Loose and Compact Dung Horizons. These became known as the Lower Loose and Compact Dung Horizons. This lower set of Loose and Compact Dung Horizons had another stockade found slightly to the west of the stockade found in the Upper Dung Horizons.

It appears that the livestock zone underwent two major phases of use: the earlier Lower horizons, followed by the Upper Dung Horizons. The Lower Dung Horizons are stratigraphically linked to the Pan Site Horizon 1 in the human zone. The Upper Dung

Horizons are stratigraphically linked to Pan Site Horizon 2 in the human zone. There is no evidence that the stockade area was used during the Upper Cultural Horizon.

B. Pan Site Horizon 2 (Middle)

Pan Site Horizon 2 is the period when the settlement reaches its largest area of occupation. Remains of this phase are found in the central zone (Dung Area, Transect 1 and 2, and the Mound Area) and in the peripheral zone (Middens 1, 2 and 3) (Figure 8).

The ceramics from Pan-site Horizon 2 contain no technological changes from those found in the previous horizon, but only a small shift in stylistic decorations.

1. Mound Area

Pan Site Horizon 2 contained a stone concentration, rows of postholes and a stone line (Figure 9). It is unknown for what purpose the stone concentration was used. The postholes were located in the eastern half of the Mound Area and were found in association with the stone line. Loubser (1993) proposed that these postholes and stones were for a fence for a rectangular enclosure. This enclosure was filled with specialized activity debris and ivory manufacture (bangles, etc). These activities, ethnographically associated with men, may indicate that this area was used for ritualistic purposes (e.g. male initiation – Junod 1962: 91) and craft production

2. Dung Area

The area between the burned hut floor and the Dung Area was excavated in order to determine the nature of intervening deposits. The Dung Area has become more specialized in Pan Site Horizon 2, it is only used as a cattle pen, and dumping ground for specialty items. Ceramics, faunal material and broken grinding stones were found

scattered in this area. This may indicate the use of this area as a midden during this phase (van Schalkwyk et. al 1997) as well as being a cattle pen (Figure 10).

3. Transects 1 and 2

There is no evidence of any structures or features in the area of Transects 1 and 2 for this horizon (Figure 11). There is only a random scatter of artefacts and small concentrations of ash and charcoal. Clearly, this is an open area between the Dung and Mound Areas during this horizon.

One natural feature was excavated in Transect 1 from this horizon. The remains of a large tree that had grown above the burnt hut in Transect 1 was found in this horizon. The area around it was largely devoid of artefacts. Even with the lack of cultural materials, it is hypothesized by the excavators that this might have been a tree around which the inhabitants came for various public gatherings. It significant that the only evidence for a burned tree in the site is found above the burnt hut floor, as if the spot was deliberately chosen because of its association with the earlier structure.

4. Midden 1

Around the periphery of the site, three large concentrations of remains were found (called Middens 1, 2, and 3). According to the ethnographic literature, these are the areas where one might find individual residences based on the House Property system. In Midden 1, there is evidence for cooking (ash 1), refuse disposal (midden deposits) along the western edge, grain storage (dung lined pits), living space (hut floor) and iron forging. Based on ethnographic models, Greenfield and van Schalkwyk (2003) believe that this area is for domestic living (Figure 12).

a. Forging Locus

The stratigraphic and artifactual evidence points towards a forging locus being located within the center of Midden 1 (Greenfield and Miller 2004). The locus was identified by the presence of a large burn soil deposit, containing charcoal, ash and slag.

b. Hut floor

A compact surface was found 4 m south of the main excavation in Midden 1. This surface was about 2 meters in diameter and differed in colour to the surrounding soil. The edges of the hut had disintegrated so the actual size is unknown. Hut floors have been found up to 3m in diameter (see Whitelaw 1994). Below this surface, a small hearth was identified. The hearth was a ring of baked earth that extended into the sterile substrate. It is believed to be a hearth because it is circular, circumscribed and was similar to other baked earth features found in other areas of the site (van Schalkwyk 1997). Based on the compact surface, and identification of a hearth, this feature is believed to be the remnant of an EIA hut floor.

c. Ash deposits

A series of six ash deposits were found in Midden 1. Ash 1 was the largest ash concentration and extended into the sterile substrate. It was a large open-air hearth.

The other ash deposits were all contained above the sterile base and were associated with various micro-activity loci (cooking, forging, etc.).

d. Pits

Three pits were excavated in the Midden 1 area. The pits are distributed in a semi circle around the hut floor. Every pit was dug into the Pleistocene sediments. The

excavators distinguish between the pits and their original use (grain storage) from their secondary use. The ceramic artifacts from the original use levels have been stylistically associated with the Pan Site Horizon 2 of the site, while the contents (ceramics) associated with the final filling of the pits have been stylistically dated horizon 3 (Greenfield and Fowler n.d.).

Pit 1, located in trench d5, extended into the rock substrate for most of its length. It has a diameter of 90 cm. Pit 2 is located in trench c4 and was c. 1 m in diameter. Pit 3 is found in trench D5. It was circular with a diameter of 86 cm. Each pit was dung lined. The ethnographic data indicate that dung-lined pits were used for grain storage (Maggs 1986).

5. Midden 2 (aka The Daga Midden)

Loubser (1993) initially excavated this area because of the high frequency of fired daga found on the surface. Loubser believed that the high frequency of this artefact type probably represented remnants of EIA hut floors. Since then, it has been recognized as another domestic midden area (van Schalkwyk et al 1997; Greenfield et al. 2000) (Figure 13).

The plough zone in Midden 2 had a depth of 20 to 30 cm below the surface. Most of the artifacts recovered in the area were from the plough zone and therefore do not have exact proveniences. There is, however, ceramic evidence (Fowler n.d.) that indicates Midden 2 may be assigned to the pan-site cultural horizon 2 (van Schalkwyk 1997).

There is evidence of granaries (above ground granaries), refuse disposal (midden deposits), cooking (ash deposits) and living space (a hut floor). These features are all associated with a domestic residence (van Schalkwyk 1997).

a. Hut floor

The hut floor was identified by the large amount of daga, it diameter could not be ascertained as it was found within the plough zone. The hut floor was found cantered around unit P30, with a diameter of 4.5 m.

b. Granary base

Midden 2 contains a single granary, indicated by the amount of granary daga found. The largest amount of granary daga was found in grid units P38-39.While there were two other small concentrations were found just south of the hut floor and one larger concentration in O50. An excavated granary base is probably associated with the nearby hut floor.

c. Ash deposits

Two ash deposits were found in Midden 2. One of the deposits was found just south of the hut and is probably wastes from the hearth inside the hut. A second ash midden was found centered in unit Q27. This northern ash midden was probably another disposal site for the hut located 8m to the South.

6. Midden 3 (aka the Ivory Midden)

Midden 3 was excavated by the Van Schalkwyk team (1997) in the last year of excavations. The surface scatter of artifacts in Midden 3 covered a 30 by 20 m area. This is of similar extents as Midden 1 and Midden 2. There is only one cultural horizon found

in Midden 3. This area is believed to have used only during Pan Site Horizon 2. Midden 3 contains evidence for storage (pits), living areas (i.e. a hut floor), refuse and cooking (in the form of charcoal and ash). There is no evidence of forging but there is evidence of unmodified hippo ivory. This may indicate the absence of distinctly male activities in this area. The pattern is slightly different than that seen in Midden 1, but is more similar to that of Midden 2 (Figure 14).

a. Sub-areas

Midden 3 can be broken down into four distinctly defined sub-areas, these are the South, West, Central and Eastern sub-areas. Each area contains its similar artifacts and was separated by an area of very little cultural materials.

The south sub-area was excavated because of conductivity anomalies and high surface artefact concentrations. However, the trench excavated yielded very little cultural remains. It was concluded (Greenfield and van Schalkwyk n.d.) that the high surface concentrations were due to down slope ploughing.

The western sub-area contained densest amount of materials and hence became the largest excavated area of Midden 3. It probably was the center of refuse disposal, while the other sub-areas had functions of storage and residence. Large quantities of ceramic, bone, stone, and charcoal were found throughout the western sub-area. According to the maps and excavation notes, ceramic concentrations occurred in small areas blending into nearby concentrations of other cultural material. It would seem to be that the small ceramic concentrations were whole or partially broken ceramics discarded in the area. Ceramics and bones were found in the highest densities in Midden 3. The

bone however, was found in a highly fragmented manner, possibly due to the high amount of ploughing occurring in the area. Charcoal, daga, and shell were the also found, but in very small quantities. A unique feature to this area was the concentration of Hippo ivory fragments found in Trench 26A quads 1, 3, 6, and 9. They are found along with other types of animal bones, charcoal, ceramics, and stone.

The central sub-area is found in trenches 26A and 26J. The maps indicate that there were lower concentrations of artifacts found here than in the western area. Artifacts found include, ceramic sherds, daga, stone and a few pieces of ivory. The artifacts mostly included ceramics clustered or in small concentrations within the sub-area. The area with the highest concentration of bone was found above Pit 2. A second bone concentration was found in Trench 26C in quads 9 and 14.

The east sub-area was only excavated to 7 m2. It is believed this concentration of artifacts had an approximate area of 12 m^2. A hut floor (4m wide) was identified in this area, 22cm below ground level.

b. Pits

Three pits, two in the western and one in the central sub-area, were excavated.

Pit 1 was located in the western sub-area. A few pottery sherds were recovered. This shallow pit was probably used to stabilize the rounded bottom of the ceramic pot while it rested on the ground. This type of feature is usually found in areas where food preparation occurs.

Pit 2 was located in the central sub-area of Midden 3. The pit was circular in shape and 80cm wide. The pit was filled with ash, ceramics, well-preserved bone and some stone artifacts. The Greenfield team was only able to excavate half the pit but believes it was originally used to store grain, and later became a refuse pit.

Pit 3 was found in the western sub-area. It was a shallow depression.

c. Hut floor

The remains of a hut floor were excavated in the eastern sub-area of Midden 3. It was approximately 4 m across and a single almost intact vessel was found on the floor.

C. Pan Site Horizon 3 (Upper)

Phase 3 is the period of abandonment and post-abandonment activities at the site (Figure 15). Evidence of abandonment activities are found in the Dung, and Midden 1 (fill of Pit 2). Post-abandonment activities are clearly present in the Mound Area (metal furnaces).

Greenfield and Miller (1994: 4), interpret the Pan-site Horizon information as an indication that only a short period of time passed between Pan-site Horizons 1 and 2, while almost no time passed between Pan-site Horizons 2 and 3. Two radiocarbon dates support the theory. A date of AD 879 was found for Pan-site Horizon 1 while a date of AD 892 was found for Pan-site Horizon 2. No further radiocarbon dates are available. The radiocarbon dates support the short time between Horizons 1 and 2 but they contribute nothing to the dating of the abandonment Horizon. The data for the timeline between horizon 2 and 3 comes from the micro-seriation of ceramic artifacts.

1. Mound Area

Pan Site Horizon 3 contained a furnace and slag. It has been surmised (Greenfield and Miller 2004) that this area was used to smelt ore.

2. Midden 1

The fill of at least one (Pit 1) of the three pits indicates abandonment activities. Grinding stones are found at the top of the pits. This indicates that the fill is part of the abandonment of the site as opposed daily refuse disposal. In behavioural terms it might appear to be part of the ritual of the closing down of the settlement, this is particularly evident in the gathering of the grindstones at the site and their deposition into Pit 2. The contents of the pits are described below (Figure 16).

a. Pits

The location and material found in the pits provide clues on the types of activities occurring in this area. Pit 1 located in trench d5, extended into the rock substrate for most of its length. It has a diameter of 90 cm and was lined with dung. The materials found, including ceramics, ash, bone, and a few broken upper and lower grinders, seemed to have slowly filled up the pit over time. There were no large pieces of ceramic or bone and Pit 1 contained the lowest number of artifacts as compared to the other pits.

Pit 2 is located in trench c4. It contains six major deposits including four major layers (Greenfield and van Schalkwyk 2003). At the top of the pit, there was a series of large capping stones made up of large stone and broken lower grinders. Between the stones, some pottery and bone was found.

The first stratigraphic layer, Horizon 1, contained ash and a few artifacts. The next layer contained a small deposit of charcoal. Below this, another layer contained ceramics, culturally modified stone, calcium carbonate and bone scatters.

The next layer from the top contained large an amount of unmodified rocks, with one lower grinder. Just below this, a layer of bone, pottery, modified stones, slag, raw metal, and charcoal were scattered about.

Layer 3 contains numerous bits of lower grinding stones, charcoal, ceramics, bones and beads. The grinding stones were found grouped in the center of the pit. No other modified or unmodified stone was found in this layer.

Layer 4 was entirely made up of ash and some charcoal. This deposit was probably created from kitchen waste. There were ceramics, bones, beads, grinding stones and charcoal randomly distributed throughout the layer. There were 4 large cattle bones arranged in a cruciform patter found in the center of the pit. The last layer contained the dung, which lined the pit.

Pit 3 is found in trench D5. It was circular with a diameter of 86cm. toward the top of the pit, an inverted ceramic pot was found containing the bones of a human infant (c. 3 month old baby). Pit 3 also contained an ash horizon in which ceramics, bone and slag were found

3. Dung Area

Cultural horizon three was only present as a thin stratigraphic layer (5cm thick) in this area and associated with only a few artifactual remains. There is no evidence that the stockade area was used during Pan Site Horizon 3.

IV. Artifact Descriptions

A. Bone artifacts

The preliminary faunal analysis done by Elizabeth Voigt and Angela von den Driesch (1984) found a variety of domesticated animals including dogs (Canis familiaris), cattle (Bos taurus), sheep (Ovis aries), goat (Capra hircus) and chicken (Gallus domesticus). Their study concluded that Ndondondwane people were using cattle and small stock (e.g. goats and sheep) as a substantial aspect of the food source and that sheep were more important than goats among the small stock animals. The faunal remains have been further analyzed by Haskel Greenfield, Tina Jongsma and Ed Fread (Fread 2007) and have been broken down into domesticated animals, wild animals, bones with cut marks and bone tools. The bone tools found mostly consisted of awls or other pointy tools.

B. Shell

A variety of different shells beads were excavated at Ndondondwane. The shells found at Ndondondwane were identified by Ina Plug (Plug 1983; Ward n.d.). At Ndondondwane, ostrich eggshell beads and marine shells were excavated. The types of shells identified include *Metachatina kraussi (African snail)* and *Achatina immaculate*.

C. Daga

Three kinds of daga were found at Ndondondwane, these include furnace daga, hut floor daga and daga from above ground granaries. The daga was identified by Tina Jongsma (n.d). Over time, daga from each of these structures changes altering its composition. Above ground granaries are regularly burned to remove insects, hut floor daga is created through regular trampling and furnace daga is regularly heated to high levels changing its composition. This allows identification of the structure from which they originated.

D. Ceramics

Kent Fowler (2001) identified and categorized the pottery sherds found at Ndondondwane through their shape and decorations. He categorized them as being used for serving, cooking or storage/transport. These classifications were based on speculated size of the vessel, the size of the vessel's opening and general shape of the container. Most of the pottery sherds found at Ndondondwane were recorded as counts so no information is available on the actual size of the ceramic artifacts found.

E. Stone

The stone artifacts consist of upper and lower grinders. Each grinder was counted and recorded individually. These items were identified in the field by each research team.

V. Conclusion

As discussed above, the site went through three different phases of occupation. It is essential to view the site in this processual manner – how it was colonized, how the settlement grew to its maximum extent, and how it was abandoned and used afterwards.

Horizon 1 represents the original populating of the site. There is evidence of living space (hut floors), cooking (hearth), refuse disposal (midden) and cattle keeping (byre) are all found in what later becomes the central zone of the settlement. The hut floors were found in the Mound, Dung and Transect 1 areas. The cooking hearth was located in the Mound Area while the refuse midden and byre were found in the Dung Area. At this point during the development of the village, this small area represents the extent of village by the settlement's founders.

In Pan Site Horizon 2 there is evidence of living abodes in Midden Areas 1 to 3 in the form of living space (hut floors), cooking (hearth), refuse disposal (midden), grain storage (dung lined pits) and iron forging. In the central zone of the site, there is evidence of cattle keeping (byre), specialized activities (ivory working) and ritual activities. People are spreading out and establishing huts in the periphery of the site. Evidence of living habitations is found in Midden 1 to 3, while the central zone becomes more specialized. The cattle byre is still being used for animals and forging. Specialized ritual activities potentially associated with male initiation, are taking place in an enclosure in the Mound Area.

Pan Site Horizon 3 represents the abandonment and post abandonment phase of the site. Abandonment activities are seen in the Dung Area and in the fill of the Midden 1 pits. The fill in the pits reflects the activities associated with the cleaning up and leaving of the site. This is seen in the systematic filling of the pits with household and village debris.

The distribution of features in the peripheral domestic middens appears to be fairly consistent across the site. Each has at least one hut structure, one and usually more grain storage features (above or below ground), a locus for cooking facilities, refuse disposal. The location of refuse middens always appears to be at the edge of each the domestic complex. Sometimes, depending upon the lay of the land it will lie to the North (e.g. Midden 1 and 2), at other times it will lie to the West (e.g. Midden 3). It never lies between the hut in the domestic areas and the central zone, even though the central zone may be downhill from the residential area.

CHAPTER 5 - METHOD, TECHNIQUES AND TECHNOLOGY

I. Introduction

This chapter will examine some of the issues encountered in choosing methods and techniques of analysis suitable for testing the hypotheses presented in chapter 2 with the data from Ndondondwane. Issues related to method are distinguished from those of technique and technology and are discussed below. Method is distinguished from technique because it is a larger, more inclusive area of study. There may be many techniques used to study an issue within a single method. Technology reflects the actual tools used to implement the study.

In this study, the method is spatial analysis. Within spatial analysis, Geographic Information Systems is a commonly used technique. The software program ArcView is one of the technologies used to construct certain types of analyses. These will be elaborated on in the rest of the chapter.

II. Analytical Method

A. Method

Since the goal of the research is to determine whether EIA villages are organized along a homestead or village model, testable hypotheses were generated in chapter 2 that involved differences in the use of space within a settlement. Hence, the analysis requires a spatial analytic approach because the question is spatially-based. The broadly based methodological approach used for this research is spatial analysis. Spatial analysis attempts to explain why things are located where they are found. A spatial analytic approach tries to answer this question with the use of theory, models, hypothesis testing, and quantitative methods (Norton 1992). It is especially useful for evaluating suitability of theories and hypotheses that predict and visualize points of data, and for interpreting

and understanding the location and distribution of archaeological features and materials.

B. Technique

Qualitative and quantitative techniques were employed in the analysis of specific data categories. Two types of techniques will be employed during analysis. Each is necessary in the creation of the database and its evaluation with respect to the issue under investgation:

Geographic Information Systems (GIS) in order to create maps of features and generate spatial distribution of remains; and

Statistical algorithms to demonstrate that the distributions are statistically significant.

There are numerous definitions of Geographic Information Systems. However, one that seems to cover all aspects is that GIS is a set of tools that allow for the capturing, manipulation, analysis and storage of spatial data. The data is geographically referenced to a point or portion of the earth (DeMers 1997; Chrisman 1997). GIS is a computer-based tool that is used for the mapping and analysis of geographical data. It is a program that allows for the input, storage, editing, manipulation, update, integration, analysis, visualization and output of spatial data (www.ccg.leeds.ac.uk/mce/mce-gis.htm). GIS can incorporate enormous amounts of information, much more than can be handled in short periods of time by a person trained in similar analysis. Of the many interesting uses for GIS, spatial modeling will be utilized for this investigation.

Typically, a Geographical Information System is used for generating maps from a variety of different data sources. Different types of maps may be created and these might be represented as different layers in a research project. Each layer can be used to depict represents data about a particular kind of feature or artifact.

Statistics allows for a more detailed systematic study of quantitative patterning of archaeological data. Statistics provide a quantitative means of testing hypotheses and establishing the significance of patterns, and removing subjective assessments (Hodder and Orton 1976:2). Statistical techniques can be used to highlight patterns in the data.

The statistical test used is chi squared - a test that sums the entire comparison up in a single probability value (Drennan 1996). Chi square is a non-parametric test of statistical significance for bivariate tabular analysis. Statistical significance tests inform a person on the degree of confidence you can have in accepting or rejecting an hypothesis.

> "Typically, the hypothesis tested with chi square is whether or not two different samples are different enough in some characteristic or aspect of their behavior that we can generalize from our samples that the populations from which our samples are drawn are also different in the behavior or characteristic"
> ( ).

Chi-squared can answer questions pertaining to, relationships between any two variables, and identify how strong is the relationship. Chi-squared was used in this thesis to identify if the artifact distributions were significant.

C. Technology - Software approaches to spatial data analysis - GIS, and ArcView

Because the data are to be analyzed in a spatial and quantitative framework, the essential technology is a computer environment. Before the data can be analyzed, it has to be made comparable since it includes information from a variety of different formats (paper maps, written notes, and excel spreadsheets). Three basic computer programs were used to organize and analyze the data: ArcView, Excel, and SPSS.

1. ArcView

The most commonly used GIS program is ArcView. It is very useful because it has the capability to both digitize and analyze the data. ArcView 3.2 by Esri is a software package that helps to create, visualize, analyze, and present information better and more effectively (ArcView 3.2 Brochure 2000: 2). This software will provide the functions and tools required to store, analyze and display information about an archaeological site. The main components to the software include the ability to create and manipulate geographic information, a database management system, and intelligent maps that can be analyzed or queried.

ArcView was chosen for the following reasons:

It has the ability to digitize and analyze the data within the same program;

The data from Ndondondwane would have to be queried between different maps, which required a relational database. This cannot be accomplished with other programs, such as with Surfer (with its raster limitations). These types of analyses can be done in AutoCAD, but it has fewer spatial analytic tools.

The lower learning curve of ArcView (in comparison to AutoCAD) made it easier to complete the task and to teach others and;

The digitizing and GIS analytical capabilities of ArcView are more integrated and less of an add-on than in the other programs (e.g. AutoCAD).

A limitation of ArcView is that is best utilized when analyzing 2-Dimensional maps. It is very difficult to draw some 3-Dimensional maps, for example, a soil profile that requires an X, Y, and Z coordinates. This is a common problem found in other spatially oriented programs. The data from Ndondondwane are mostly of a two

dimensional nature. Because GIS allows for the visualization of data, it is a more appropriate technique for the analysis of the information from Ndondondwane.

2. Excel

Excel is computer software spreadsheet that can also be used for the recording and manipulation of data. Excel is used extensively by many disciplines because of the simplicity in which data can be entered, stored, and manipulated. Excel was chosen as the software because of its ease of use and simplistic manipulation. The Excel data can then be imported into a variety of different other programs, including ArcView, Surfer, SPSS, etc. Since most of the quantitative data from Ndondondwane was entered into excel by the last team of researchers (Greenfield et al. 1997), it is one of the technologies used in the analysis.

3. SPSS

SPSS is a commonly available computer statistical package, developed for use with a variety of different forms of data. SPSS was used to calculate the chi squared statistical results. It includes a variety of easily used statistical algorithms, such as Chi-squared, Pearsons r, etc. It is widely available, easy to use, and applicable to data organized in spreadsheets.

III. Types of data available

Because Ndondondwane was excavated by three different excavators, each with their own research question, the information elicited from the excavations was recorded differently. To make the data comparable, an excel file was created for each artifact type (i.e. ceramic, stone, faunal, etc). Each of these files was organized in the same format to create uniformity within the data. This required the terms used each of the spreadsheets to

be made identical. Once this step was complete, an X, Y coordinate was given to each artifact. Three types of data are available for analysis. Each is described below.

A. Maps

Each generation of researchers created their own maps detailing their excavations. Excavators drew to different scales and recorded information differently. For example, the maps created in the last field season, 1997 included x, y, and z coordinates for artifacts while other field season's maps were not recorded with such high level of accuracy.

A variety of different maps of the site were created. Maps were created for each area of the site and contained all the artifact and feature locations. Maps were also created of the site as a whole, of the valley in which the site is located, and of the region in which the site is found. Theoretically, these maps could all be added to together because they are all georeferenced with respect to each other. Since ArcView maintains a database of the recorded information, all the data on the smaller map would be included on the larger scale maps (although not necessarily visible). If one wants to see varying level of detail, one can zoom in to see individual artifact (and their associated data) or zoom out for a more macroscopic view of the feature, the site, or the region.

B. Spreadsheets

The spreadsheets contained the artifactual information from Ndondondwane. However, before they could be used in the analysis, they had to be transformed into a format that would allow them to be imported into ArcView. Names, symbols, abbreviations all had to be standardized and coordinates attached to each artifact. The spreadsheets include nearly all data from all years of fieldwork.

C. Paper data

Although most of the artifactual data was contained in spreadsheets, there was

some data that was missing. Various odd bits of information gleaned from the excavator's notes could help in some cases, as in the interpretation of maps and features data not initially included in the spreadsheets. Also, a few artifacts were not recorded in a digital format and had to be entered manually into the spreadsheets.

D. Problems in data compatibility

The fact that three different excavation teams collected the data from Ndondondwane created the potential of the numerous problems in the data analysis. Firstly, the available information was in a variety of different formats including published articles, spreadsheets, field records and paper maps. Secondly, the different excavators used different datum points and grid systems. This created a situation where some spatial research units (e.g. trenches) were off-grid and lacking coordinate information. Thirdly, the recorded data had no standard set of abbreviations. Area definitions and titles were changed between excavators; the result was that spreadsheets could not be easily combined into a relational database. Fourthly, each excavator brought a different research question. Therefore, the data collected were not consistent between archaeologists. Lastly, not all the data were included from the field records in the spreadsheets. In order to rectify these problems, a number of tasks were undertaken.

E. Issues in data manipulation

The first step was to examine the available maps to identify which format (raster or vector) was best for digitally entering them into the computer. The vector method was chosen since all of the field maps were hand-drawn. Each feature could be easily digitized and separately recorded. In addition, this method allows the user to choose what information from the map they want to focus on. Varieties of different maps were created from each excavation. Based on their research questions, each excavator found it

important to map different areas of the site. Maggs (1984) published a few maps of his excavation units. Loubser (1984) made the first contour and feature maps of the site. Even though, his original field maps were lost, he extensively published maps of the site prior to this (Loubser 1993). The van Schalkwyk-Greenfield (van Schalkwyk et al. 1997) expedition created the most useful maps of the site, ranging from maps of individual excavation units to a map of the region.

The second step was to consider the types of media on which the data was stored. Published articles, spreadsheets, field record forms, photographs and paper maps were the types of media available for analysis. However, before any type of analysis could begin, many of these data had to be digitized. By making the data digital, the speed at which the maps could be incorporated into a single map of the same scale was greatly shortened.

The third step was to collect all of the available spatial information to georeference each map. Georeferencing is when data or images are referenced to fixed points in space (Allen 1990). Most of the maps were hand drawn, but some were taken from publications because the originals were unavailable. ArcView requires at least four different points on a map to solidify the georeferencing. The georeferencing provides the computer program with the spatial dimension of the features on the map. Finding four similar points between different maps solved this problem. As more areas of the site were digitized, this procedure became more easily accomplished. Only the pits, trenches, features and units were digitized during this initial phase. The artifactual data have been added in point form. This is accomplished by importing them from a spreadsheet.

The fourth step in the process was to organize and upgrade the spreadsheet information. Different people, who used different titles and abbreviations throughout the

spreadsheets, entered the information in these files. The first step to fix this was to create conformity in abbreviations and titles. The second step was to check data. Some data were incorrectly entered due to computer formatting problems, such as dates that could be corrected by checking with the field records. This endeavor actually introduced a new problem - numerous bits of information, including unit locations and artifactual data were missed during the previous data entry. Each field record then had to be reviewed to see if it was included in the master database, and upgraded if necessary.

IV. Analytical activities: steps taken to accomplish the analysis

In order to analyse the data, each of the data types needed to be modified and manipulated. Each of these steps are described next.

1. Step One:Data gathering

The first step was to gather all the data from all the excavations. The early excavations teams did not quantify their data on computers or publish most of it. All of the data in their field notes and publications needed to be entered into Excel and ArcView. This required several trips to South Africa to gather the unpublished data. Furthermore, since each excavation team used different provenance, labeling, recording, and artifact classification system, issues of comparability needed to be resolved. This required creating a universal provenance system and to reanalyze and/or reclassify the older data to match the upgraded and more detailed analyses of the Greenfield and van Schalkwyk team.

2. Step two: Map Generation

All of the paper field maps showing features and artifacts were digitized using ArcView. All of the features at the site could be depicted in this manner. Artefacts,

however, were not plotted *in situ* for all excavation teams in all trenches. Only the maps from the Greenfield-van Schalkwyk team piece-point plotted artifacts in this manner. As a result, it was necessary to obtain the artefact information for the missing trenches from the Excel spreadsheets. While the data were not piece-point plotted in these trenches, quantitative distributions by trench across space and through time could be generated. These more complete data were then utilized to produce distribution maps of all the different artifact types. The data are subdivided by occupational horizon since the nature of occupation at the site changed over time. This allowed determination of the extent of activity areas, based on feature and artefact distributions.

3. Step three: Activity area identification

Activity area identification was based on the distribution of features and artefacts. Some activity areas were identified during survey and excavation based on continuities and discontinuities in the distribution of remains. They include the large excavation areas in the center (Dung, Mound, Transects 1 and 2) and periphery of the site (Middens 1-3, Charcoal Preparation). Some of the major activities that were defined on the basis of features include metal production and manipulation (forging and smelting), stock keeping (kraal), sleeping (huts), storage (pits, granary bases), cooking (fire pits), garbage disposal (midden), etc. Further refinement of the function of activity areas can be further refined by examining the artefact distributions within them. Until now, a comprehensive artefact analysis has never been conducted for the site.

4. Step four: Artefact distribution analysis

While the above definition of activity areas was done by more traditional analysis, this thesis will take the analysis a step further in order to test to the validity and refine the

previously defined activity areas. This was done by comparing the distribution of artifact types (the number and volume of the artifacts) in the activity areas (e.g. Midden 1) to determine if they are associated with various proposed activities (e.g. Storage) associated with specific features (Pit 2). Statistics will used to determine if the artifact distribution were random or significant.

5. Step 5: Comparison

The last step is to test whether the settlement was a homestead or village. The testable criteria were created based on the expectations of different activities which leave archaeological residue. The above data were used to identify whether distribution of activity areas indicates the presence of single or multiple households in the settlement. Comparison between the data and hypothetical criteria will enable determination of which settlement type, homestead or village, best fits the data found at Ndondondwane. Quite simply, the model predicts that if the site was laid out according to the Village model, there should be replication over the site of certain activities. This will be especially true of domestic areas. If the site was organized along the lines of the Homestead model, there should be less replication and more complementarities in activities between activity areas.

V. Conclusion

The method used to study the site will be a spatial analysis. The technique involved will incorporate both GIS and spatial statistics. The program ArcView will be used to assist in the generation of maps and identification of activity areas, while SPSS will the computer software used to identify statistical patterns in the data. This information will then be used to identify activity areas thought the site.

The data underwent a variety of changes before it was used in ArcView. The maps were digitized in and the spreadsheet information was updated, with coordinate information added and then imported into ArcView. The statistic chi-squared was used to identify if the artifact distributions where indeed significant or only a random scatter.

Usage of intra-site spatial analysis has had limited usage in archaeology. This study will attempt to not only answer the research questions stated previously, but also examine the possibilities of using GIS in archaeology in the future. The next chapter will discuss some of the conclusions reached after the analysis.

CHAPTER 6 - ANALYSIS

I. Introduction

In Chapter 2, archaeological predictions for village and homestead spatial organization were presented. If the predictions for each model (homestead and village) are followed through in a logical way, the distribution of certain features and artifacts should be different. The different categories of artifacts should have a unique and predictable pattern, since their distributions derive from the behavior of the occupants of the site. Artifacts used for different functions should have a different spatial distribution relating to where they were used and/or discarded. But, the feature distribution at the site gives some insight into what might be expected by the artifact analysis. The best example is that of livestock enclosures.

The number of livestock enclosures can be used to help generate test implications for whether the site is a village or homestead. Enclosures are created to house cattle and smaller livestock (sheep and goats). Their location represents both a spiritual and defensive ideology. They are generally located towards the center of the settlement (Phillipson 1985). Ethnographically, the number of contemporary byres can signify the number of family clusters living in the site (Hall 1984; 75), and by implication whether it was a village or homestead. Simply, there are two potential hypotheses that can be generated:

- If the site was laid out according to the homestead model, there should be a single byre for use by the settlement inhabitants, storage of grain should be found in the central portion of the site, metal production residue should be found in only one area of the settlement, and hut floors should be found evenly distributed around the byre.

- If the site was organized along the lines of the village model, there should be multiple byres in the central portion of the settlement, storage of grain in all areas of the site, residues of metal production in multiple areas, and dwellings in clusters.

Given that the number of byres at Ndondondwane in each of the two horizons under examination was always one would indicate that the site was always a homestead. This proposition is tested with the artifact data below.

This chapter will explore the data from Ndondondwane to test these hypotheses. In this chapter, the feature and artifact distribution data are used to determine if Ndondondwane was a homestead or a village. In order to accomplish this task, the chapter will be broken down into three sections. The first section will discuss the theoretical relationship between artifact distributions and activities. The second section will review the artifact and feature distributions from Ndondondwane in order to identify activity areas at the site. The last section will review the distribution of artifact and features by horizon. From the various stages of analysis, it will be possible to determine whether the site was a village or homestead.

II. Proposed behavioral relationship between artifact distributions and activity areas

Certain artifacts have basic associations with behavior. For example large jars, when full are difficult to move and by nature are used to hold goods, are most likely used for storage. This next section will use the available artifacts to identify potential associated behaviors.

In order to identify social relations and economic activities within a site, one has to differentiate domestic household space, public space and the location of livestock

within the settlement (Shahack-Gross et al. 2004). This can be accomplished through ethnographic analogy and artifact and feature identification.

A. Ceramics

1. Cooking (preparation) ceramics

Women are largely responsible for cooking and other domestic chores (Kuper 1982: 13). Women's domestic activities are relegated to the periphery of settlements. The residence of households tends to be located in the periphery of settlements, and this is where most food preparation took place. Hence, ceramics used in the preparation of food should be found largely concentrated in deposits around the periphery of the site. The location of cooking ceramics helps in the identification of a domestic area. The cooking ceramics are a useful indicator used for the analysis.

2. Serving (consumption) ceramics

Since serving vessels are those from which people are eating, they then should be useful as predictors for food consumption. However, consumption ceramics are less sensitive indicators of the different spatial models of behavior because people may and usually do eat all over the place. As a result, they are not expected to be useful in the analysis. Ethnographic research has shown that during the warm summer months, men spend more time at leisure, sitting around the men's compound drinking beer and eating (Kuper 1986: 44). But, the highest concentrations should be found near the residential areas, where both men and women would be jointly found and consuming food (Kuper 1982: 47). Less evidence for general food consumption should take place in the male associated communal area, where only men are consuming food. Quantitatively, there should be less evidence for consumption in exclusively male areas because men are away from the site during different times of the year. As a result, different areas of the site

(such as male activity areas) are less intensively occupied and will have less debris accumulation. The serving ceramics are a component in identifying a domestic area and are useful in the analysis.

3. Storage and transport ceramics

It was impossible to distinguish during the analysis between storage and transport vessels (Fowler 2002). As a result, these two categories were lumped together. This creates a problem that is insurmountable in terms of the analysis. Expectations can be generated for storage, but cannot be archaeologically tested without knowing the specific function of vessels. Otherwise, the expected distributions will be similar, as demonstrated next. Ethnographically, grain is not commonly stored in ceramic vessels. Grain is stored in pits or above ground granaries. Most ceramics used for storage or transport are for a variety of liquids (e.g. milk, water, beer, etc.) and other foods (corn or melee based gruel, aka *putu* in Zulu or porridge; and a variety of leftovers) (Fowler 2001). Beer storage vessels area often found in the men's hut (Davidson 1985: 74) Storage and transport ceramics are a component in identifying activity areas which is critical for the analysis.

B. Daga

There are three types of daga: granary floor, hut floor, and (furnace walls and floor). Each type of daga provides insight into the type of settlement layout.

1. Granary daga

Ethnographically, grain is not commonly stored in ceramic vessels. Grain is stored in pits or above ground granaries.

2. Hut daga

Dwellings archaeologically are identified by the presence of hut floors or concentrations of hut floor daga. The identification of hut floors is important because it

provides a focal point to associate other features and artifacts in the area. A hut floor usually, but may not always identify a domestic area since huts were used for a variety of activities. The other artifacts and features must be examined along with the hut daga to identify the activity going on the area.

3. Furnace daga

Furnace daga will indicate where smelting took place. A closed furnace is used in the smelting of metal, while an open fire can be used for forging. Ethnographically, ironworking took place outside the settlements (Maggs and Whitelaw 1991). Greenfield and Miller (2004) argue that this pattern existed as far back as the EIA and that the iron furnace at Ndondondwane post-dates the main occupation. While furnace daga can assist in the location of furnaces, it has little bearing on the analysis since it would post-date the horizons under investigation (Horizons 1 and 2).

All of the furnace daga is found in the Mound area. It is distributed between all three horizons. This can be explained as saying that furnaces were in all three horizons, or more realistically we look at the nature of the deposits and the excavation and analytical history of this area. Excavation of this area demonstrated that all furnace deposits were associated with the Upper Cultural Horizon (post-abandonment – Greenfield and Miller 2004). Therefore, no furnace daga should be found earlier. This can be interpreted to mean that:

- The identification of daga as being from a furnace is incorrect;
- The furnace was dug into the underlying level (Loubser 1993). If so, small fragments were accidentally collected and recorded as part of these underlying strata; or.

- Greenfield's interpretation of the stratigraphy in this area is based on a close reading of Loubser's 1993 report is incorrect.

However, Loubser's field notes were lost and the artifacts were only provenanced in the museum by excavation level. Greenfield interpreted the excavation levels in terms of Loubser's horizons. It is possible that Greenfield made some errors due to the fact that the furnace base was dug into the underlying deposits. The furnace daga fragments all tightly cluster within the Mound Area and are probably from the Upper Horizon.

C. Storage pits

Storage pits are most often used to store grain (Phillipson 1985). Pits are used for long term storage (the contents have to last the household until the next harvest). Storage pits will help in the identification of domestic abodes because it occurs in conjunction with a female led abode (Sanders 2000; 475).

D. Slag and ore

Slag and ore are the by-products of the creation of metal artifacts (Greenfield and Miller 2004). Their differential distribution can and has been used to signify the location of different types of metallurgical activities (Greenfield and Miller 2004). Most importantly for this analysis, the distribution of forging slag can be used to identify how much of a repetitive activity forging was at the site. If it was repeated in each of the domestic areas, then the site is probably a village. If it is only present in a single domestic area or in the central zone, it is probable that the settlement was a homestead since it tends to be a specialist activity.

E. Stone

The location of the grindstone fragments can signify areas where grain was processed before cooking, but after storage. Women in southern African traditional societies are responsible for the grinding of grain and generally do it within their

domestic household areas (Kuper 1986:47). Grinding stones are an indicator of a domestic activity area and can be used in the analysis.

F. Bone tools

Although a variety of faunal information was collected (e.g. cut marks, domesticity, taxonomic status, etc.), only the presence of bone tools will assist us in the identification of the spatial model used at Ndondondwane. Any concentrations of bone tools (needles and awls) may represent areas where clothing was manufactured or repaired (Voigt 1983).

If concentrations of bone needles and awls are found in the central part of the site, this may argue for men are using the tools for non-domestic type activities. These activities may include the manufacture of ritual materials or possibly used in the manufacture of materials used in the production of iron.

III. Analysis – artifact distribution within activity areas by horizon

Artifacts recovered archaeologically were discarded by prehistoric peoples and have gone through numerous cultural and natural processes (Schiffer 1975). A limitation of this thesis is that some of these processes have not been identified prior to analysis. For example, the ceramic analysis (see Fowler 2001) did not take into account fragmentation of the artifacts. Gorecki (1985) has argued that studies such as this fail to consider the post-depositional process. He believes that regular intervals of study at a site are required at regular intervals to understand how sites are altered by natural and cultural process. Others such as Sinopoli (1991: 83-88) have argued about the importance of identifying natual and cultural process on artifacts. The issue of post depositional process will be dealt with in the final report on Ndondondwane. In an attempt to limit the impact of formation processes, the artifacts are discussed in terms of actual number, frequency,

weights and volumes (artifats were placed in a jar and the volume in ml was recorded) when available (see Wandsnider 1996 and Sullivan 1992 for an example).

In this section, the distribution of artifacts within each activity area is described.

A. Horizon 1

Horizon 1 represents the original occupation of the site. Only features dated to this horizon were found in the central zone of the site (Mound Area, Dung Area, Transects 1 and 2).

1. Ceramic

There are two ways of presenting the ceramic data. The first way is by looking at the raw values for type totals from different areas. The second is to present the percentage of one type contained in each area. The ceramic analysis lends itself to this type of analysis because of the different function of each ceramic type. While the total number of one type of artifact in an area provides evidence that the activity (cooking, serving or storage/transport) too place, the percentage of one type of artifact per area provides clues as to which activity took precedence per area. The second type of analysis will be used for ceramics because it provides more useful interpretation for the research question. However, both percentages will be present in the tables, only the percentage of all ceramic types per area will be viewed in the text.

The *chi square* statistic was used to initially determine if the distribution of ceramics was significant. The chi squared results from Horizon 1 indicate that the distribution of ceramic artifacts is significant (see appendix).

<u>a. Data description</u>

- Cooking: Ceramics identified as cooking pots were found in all the activity areas used during Horizon 1. Cooking ceramics are important because they indicate the

presence of possible domestic areas. It is where food preparation (as opposed to consumption) takes place. Five sherds (0.84%) were found in the Mound Area, three hundred and sixty-seven (37.91%) in the Dung Area, one hundred and thirty-nine (52.85%) in Transect 1 and fourteen (100%) in Transect 2 (Table 1; Figure 17).

- Serving: Serving ceramics were found in all the activity areas during Horizon 1. One hundred and sixty three sherds (27.35%) were found in the Mound Area, one hundred and eighty five (19.11%) in the Dung Area, one hundred and three (39.16%) in Transect 1 and none in Transect 2 (Table 2; Figure 18).
- Transport/Storage; Ceramics of this type were found in all activity areas during Horizon 1. Four hundred and twenty-eight (71.81%) sherds were found in the Mound area, four hundred and sixteen (42.96%)in the Dung area, twenty-one (7.98%) in the Transect 1 and none in Transect 2. (Table 3; Figure 19).

b. Conclusion – Interpretive Implications

The chi-squared result has shown that the distribution is significant (see Chi-square results in the appendix). Even though most cooking ceramics are found in the Dung Area in terms of absolute quantity, this number is not a reflection of the dominant ceramic-related activity for the area. When the percentages are reconfigured to reflect the relationship between ceramic types within a single area, the frequency of cooking ceramics declines to 37.91%. A similar pattern exists for the Mound Area, where cooking ceramics are less than 1% of the ceramics present. These data stand in contrast to the pattern in Transects 1 and 2, where cooking ceramics represent 52.85% and 100.00% of the ceramics, respectively. The extraordinarily large quantity of cooking ceramics in

Transect 1 and 2 (associated with the Burned Hut) can be interpreted to indicate the presence of a domestic area in this part of the site at this time. The much lower percentages of cooking ceramics in the Dung and Mound Areas would indicate that the huts in these areas were not for domestic purposes.

Based on the percentages of serving ceramics per area, two sets of conclusions can be drawn:

It would appear that people were eating in all inhabited areas, except Transect 2 during this Horizon. Other than Transect 2, which probably has a residue of artifacts from the surrounding activity areas, the data points towards each area being a domestic domocile.

The abundance of storage or transportation ceramics in the Mound and Dung Areas indicates the importance of those areas for storage or transportation. In contrast, the smaller quantities in Transect 1 and none in Transect 2 indicate different functions for those areas – storage was less important.

There is clear complementarity between the various areas of occupation. The Mound has more evidence for food consumption, Transect 1-2 is clearly a domestic area with a heavy emphasis upon food preparation, and the Dung Area is a more balanced mixture of food production (cooking), consumption (serving) and short-term storage activities. The above distribution data for ceramics would support the archaeological implications of the Homestead model.

2. Daga

a. Granary daga - Data description

More fragments (n=38; 68%) of granary daga were found in the Mound Area than elsewhere. Less than half (n=18; 32%) were found in the Dung Area. These amounts are also reflected in the volumes taken of the granary daga. None were found in Transects 1 and 2 (Table 4; Figure 20).

b. Conclusion – Interpretive implications

The presence of granaries indicates grain storage. Interestingly, grain storage is not associated with each hut – none were found in Transects 1 or 2. Some evidence exists for granary daga in the Dung Area associated with the hut at its east end. But, the most evidence for granary daga is found in the Mound Area, with two phases within this horizon with granaries.

This distribution implies that grain storage is largely taking place outside (Mound) of where cooking is located (i.e. Transects 1-2 and Dung). This would support the archaeological implications of the Homestead model, since there are spatial complementarities.

c. Hut daga - Data description

Hut floor daga is found in each area. Only a few pieces were curated from the Mound Area (n=8), even though a large compact dung floor was excavated (Loubser 1993). A few (n=3) small chunks were recovered in the Dung Area from the hut floor at the east end of the area. A very large quantity (n=549) of hut daga was excavated from the floor of the burned hut in Transect 1. The volumes for hut floor daga are not usable because there is no information for Transect 1 (Table 5; Figure 21). The entire 6 m diameter floor was intact, *in situ* (van Schalkwyk et al. 1997). All of these concentrations

are associated with hut floors (Loubser 1993; Greenfield, van Schalkwyk and Jongsma 1997.).

d. Conclusion – Interpretive implications

There is evidence to indicate the presence of hut floors, both from intact architecture and concentrations of hut floor daga, in three areas - Transect 1, and the Mound and Dung Areas. The presence of huts in and of themselves does not indicate the presence or absence of domestic or other contexts. The types of activities associated with these structures are more indicative of their function. The ceramics point to a greater domestic function for the hut in Transect 1. In contrast, the huts in the Mound and Dung Areas are more highly associated with serving and storage/transport vessels. This is interesting in light of the fact that the distribution of granary daga indicates that the huts in the Dung and Mound Areas were also associated with grain storage, even though they did not appear to be used as domestic areas. This distribution might indicate complementarities of functions between the areas, supporting the hypothesis that the settlement was a single integrated homestead.

e. Furnace daga - Data description

No furnace daga was found at this horizon.

f. Conclusion – Interpretive implications

This is not surprising given the fact that the furnace is now dated to Horizon 3 after the main occupation at the site

3. Ore and slag

a. Raw ore – Data description

Raw ore was found in Dung Area (n=7; 46.67%), Mound Area (n=7; 46.67%), and Transect 1 (n=1; 6.67%). The Dung Area contained the same amount as the Mound Area however, the Dung Area ore weighed over twice as much as that found in the Mound Area (Table 6; Figure 22).

b. Conclusion – Interpretive implications

While raw ore appears to be widely distributed in this horizon, it is concentrated mostly in the Dung Area with the second largest weighed amount coming from the Mound Area. It is not directly associated with forging loci since none were found in the Mound Area. It probably simply indicates the fact that ore was collected little by little until enough was available for a smelt, which may take place in intervals of several years (Greenfield and Miller 2004: 56). The implication of this distribution is that there is complementarily in its distribution, with some places having more and others having much less. This would support for a homestead model.

c. Forging slag - Data description

Slag was found in the Dung area (n=58; 93.55%), Transect 1 (n=2; 3.23%) and Transect 2 (n=2; 3.23%), the weights also follow a similar pattern (Table 7: Figure 23). Ore and slag from forging were found concentrated in the Dung Area. This concentration of forging slag is associated with a forge found in the SW corner of the Dung Area. A few fragments of forging slag unassociated with a forge were found in Transect 1.

d. Conclusion – Interpretive implications

The lopsided distribution of forging slag would indicate that forging of iron took place largely in the Dung Area. It is associated with the non-domestic locus at the east

end of the area. A single forging locus is what one would expect if the site was a homestead.

4. Grinding stones

a. Grinding stones - Data description

Upper grinding stones were disproportionately found in the Dung (n=3; 15.39%) two ground flat, one with a v-shaped depression) Area and Transect 1 (n=16; 84.21%) area (Table 8; Figure 24). None were found in the Mound Area.

The distribution of lower grinding stones is different. They were found in the Mound (n=1; 12.5%, ground flat) and Dung (n=3; 37.5%, one with a U-shaped depression) and Transect 1 (n=4; 50%) areas (Figure 25).

b. Conclusion - interpretive implications

The overwhelming majority of grinding stones (when upper and lower are combined) are found in Transect 1 (50% of lower; 84% of upper). Clearly, this is a location where grain processing was important. The numerous upper and lower grinders found in Transect 1, in conjunction with the high percentage of cooking ceramics further indicates that this area was used as a domestic domicile.

Grain was also processed but to a much lesser extent in the Dung Area (16% for upper; 37% for lower). The Dung Area is where numerous activities took place, including the grinding of grain. The quantity of grinding stones follows the general trend of high densities and variety of artifacts being excavated in the Dung Area.

There is little evidence for grain processing in the Mound Area

There is clear evidence for complementarities in grinding stone distribution. The data supports the expectations for the homestead model.

5. Bone

a. Bone - Data description

Bone tools were found in the Mound Area (n=5; 20%,, three identified as awls) and Dung area (n=20; 80%, eight identified as awls) (Table 9; Figure 26). Over twice as many bone tools were found in the Dung Area than the Mound Area, and none were found in Transect 1-2.

b. Conclusion - Interpretive Implications

Based on the distribution of culturally modified animal bones, it would seem that activities associated with the use of bone tools are most highly associated with the Dung Area, less with the Mound Area, and not at all in Transects 1-2. Once again, a pattern of complementarities exists, although it is very different than seen above.

6. Storage pits

a. Storage pits - Data description

There are no archaeological indications of storage pits found during this horizon.

b. Conclusion – Interpretive implications

There is no evidence of long-term storage in Horizon 1.

7. Byres

a. Byres - Data description

There is evidence of a single byre in the Dung Area.

b. Conclusion - Interpretive implications

The single byre fulfills the expectations of the homestead model, which calls for a single byre to found if the settlement was a homestead.

8. Conclusion – summary of Horizon 1

Based on the small area inhabited during this time, the features and artifacts would appear to support the homestead model. A single domestic locus was located in Transect 1, where most of the cooking took place and grinding of grain took place. The Mound and Dung Areas were loci for a variety of other activities. The Mound area is where grain storage is focused and an area where men probably congregated. Most of the storage/transport vessels (probably associated with beer consumption - Kent Fowler, pers. comm.) occurred in this area, indicating that this was the zone where men sat around talking. In contrast, the Dung area was used for a variety of activities, including food preparation, short-term food storage, forging, beer consumption, food serving, etc. It was clearly a more general activity zone. The distribution of material culture in Pan-Site Horizon 1 more closely resembles what one would expect to find archaeologically, if Ndondondwane was a homestead.

B. Horizon 2

Horizon 2 represents the occupation of the entire settlement. The site expands to include most of the peripheral activity areas (i.e. Middens 1, 2 and 3), and the site expands to its largest dimensions (200m by 200m).

1. Ceramics

a. Ceramic - Data description

- Cooking pots: Fragments of ceramic cooking pots are found in all the excavated areas of the site during Pan Site Horizon 2. The highest raw value comes Midden 3 (n=516), but it has a relatively low percentage of pottery from the area (17% of ceramics from that area). The range of ceramic functions in this area is very diversified. But, the area with the largest percentage of cooking ceramics is

Midden 1 with (n=185; 68%), followed by Midden 2 (n=67; 57%). This stands in contrast to the pattern in the central zone, where there are almost no cooking ceramics (n=3; 0.97%) in the Mound Area. More cooking ceramics were found in the Dung Area (n=394; 37%), which always appears to be a diversified activity area. Very few sherds were found in Transect 2 (n=9), but they represented most of the ceramics from the area (90.00%) (Table 10; Figure 27).

(n=82; 98.8%) in Transect 1,

- Serving vessels: Serving vessels were also found in all areas of the site, except for Transect 2. The Dung area contained three hundred and forty-six sherds (32.28%), eighty one were found in the Mound Area (26.13%), one was located in Transect 1 (1.2%), twenty-nine were in Midden 1 (10.74%), thirty-three were in Midden 2 (27.97%), and sixteen hundred and forty-four were found in Midden 3 (55.52%) (Table 11; Figure 28).
- Storage/transport vessels: Ceramics identified as storage/transport vessels were found in all the areas of the site. The largest concentrations were found in Midden 3, Dung and Mound Areas and Transect 2. Three hundred and thirty-two (30.97%) were found in the Dung area, the Mound had two hundred and twenty-six (72.90%), Transects 1 and 2 respectively contained 10 and one (10.00%) sherds, Midden 1 had fifty-six (20.74%), Midden 2 had eighteen (15.25%), and Midden 3 contained eight hundred and one sherds (27.05%) (Table 12; Figure 29).

b. Conclusion – Interpretive Implications

The chi-square results have shown that the distribution is significant (see chi-square results in the appendix). The distribution of cooking pots clearly demonstrates that

this activity is mostly taking place in the peripheral activity areas, both in terms of raw values and percentages. This stands in contrast to the pattern in the central zone, where there are far fewer cooking ceramics. This is particularly true of the Mound Area, while the Dung Area appears to have an intermediate value reflecting its more diversified activity role. As expected very few sherds were found in Transects 1 and 2 because it is an open-air zone with no domestic functions.

In terms of raw numbers, most of the serving sherds were found in the outer periphery of the settlement. However, , the majority of serving sherds from the whole site are disproportionately located in Midden 3. This can be explained in three ways:

There is some unknown taphonomic process occuring in Midden 3 that breaks up the ceramic sherds into smaller piecs than in other areas of the site, which results in larger number of sherds.

There is an unidentified dump midden, other than the Dung Area, that was used to throw away ceramic sherds

People are consuming food mostly in Midden 3

Although the first two ideas are possible, it is probably the third statement which most likely. This creates a situation where Midden 3 is not used that often for cooking, but mainly used for the consumption of food. This nonconformity throughout the settlement is what one would expect to find if the site was a homestead.

Once again, the Mound area contains a low percentage of serving vessels while the Dung Area reflects the more diversified activity area role, as indicated the presence of other artifacts.

The distribution of storage/transport vessels demonstrates that most storage and

the drinking of beer occurred in the central zone of the settlement, specifically, the Mound Area. Ethnographic studies have shown that in the central periphery of EIA settlements, there is an area reserved for men whom are in control of the grain storage (in the form of storage vessels or granaries). The disproportionate percentage of storage vessels in this area may reflect this ethnographic parallel. The serving vessels fulfill the criteria expected from the homsetead model because of their diproportionate distribution.

2. Daga

a. Granary daga - Data description

The granary daga was not evenly distributed across the site. Midden 2 contained the only significant amounts, over seventy percent of granary daga located during this horizon. Dung area had six (18.75%) pieces, Transect 1 had three pieces (9.35%), and Midden 2 contained twenty-three pieces (71.9%). The volume of granary daga follows a similar pattern as the percentages (Table 13; Figure 30).

b. Conclusion – Interpretive implications

Midden 2 was where the majority of granary daga was recovered. These are where large amounts of grain were stored in above ground granaries since granaries are used to store grain based upon ethnographic analogy (see for example, Bryant 1967: 78 and Krige 1969: 39-47).

There is evidence of grain storage taking place in Midden 2. There are clear complementarities between the two areas and the central zone. There is significant grain storage occuring in the periphery. This then would denote that there was much duplication of this kind of activity around the site since there were multiple areas of grain storage. Hence, the settlement has become a village.

c. Hut daga - Data description

There is evidence in the form of hut daga, that there were structures in each of the peripheral activity areas (Middens1, 2 and 3) and in the central zone, the Mound area (Table 14; Figure 31). The largest amount (quantity) was found in Midden 3 (n=251). The Mound area (n=23) and Midden 2 (n=7) contained smaller amounts of hut daga, and the Dung area contained almost none (n=1). The high number of fragments and largest volume (2295ml) found in Transect 1 (n=31) are deemed by the excavators to be remnants of the burned floor in the Lower Horizon that were accidentally included in the Middle Horizon by inexperienced excavators. The rest of the horizon in this area indicates it was an open-air activity zone. Corroborating the evidence for huts in the peripheral areas is the unburned dung hut floors in Middens 1 and 3.

d. Conclusion – Interpretive implications

The location of hut daga indicates the presence of structures. A large "male" activity area is associated with an enclosure in the Mound Area in the central portion of the site. Dwelling areas are found in each of the peripheral activity areas. Each peripheral area only conclusively held evidence for a single abode. No clusters of hut floors were found. This distribution helps to support the hypothesis that each peripheral activity area was a domestic area. The location of the hut daga however cannot be used to support the expectations of either a village or homestead model.

3. Raw ore and Slag

a. Raw ore – Data description

Raw ore was found in all the activity areas at the settlement, except Transect 2. Five pieces (12.5%) were found in the Mound area, five (12.5%) in the Dung area,

Transect 1 and 2 had respectively five (12.5%) and zero pieces, Midden 1 had three (7.5%) pieces, Midden 2 contained three (7.5%) pieces while in Midden 3, nineteen (47.5%) pieces were excavated. The weights of the ore indicate that larges amount came from Midden 3 (808.15ml) and a range of 78ml to 94ml being found in Midden 1, Transect 1 and Dung Areas (Table 16; Figure 32).

b. Conclusion – Interpretive implications

Ore was widely stored across the site since raw ore was found in each area of the site (except Transect 2). The data fulfills the expectations if the settlement was a village.

c. Slag – Data description

Slag was found in most excavation areas: the Dung Area (n=20; 12.66%), Transects1 (n=70; 44.3%) and 2 (n=4; 2.53%), and Middens 1 (n=44; 27.85%), 2 (n=5; 3.16%), and 3 (n=15; 9.49%) Areas. The weights follow a similar pattern of the quantities. Each area had a comparable weight to its quantity. (Table 17; Figure 33).

d. Conclusion – Interpretive implications

The pattern is similar to that of raw ore. There is no evidence for complementarities between areas since slag is found in high quantities in both peripheral and central zones. It appears to be more support for the village model.

4. Grinding stones

A problem with this horizon is that most were collected at the end of the occupation and deposited into Pit 2 of Midden 1. Clearly, the distribution cannot adequately reflect where grinding activities took place. But, some data can be inferred.

a. Grinding stones - Data description

- Upper grinders were found close to all the identified activity areas. Four upper grinders (40%) were found in the Mound area, three (30%) in the Dung area, one (10%) was excavated in Transect 1 and two (20%) were found in Midden 2 (Table 18; Figure 34).
- Lower grinders were found in the Mound (n=2; 25%), Dung (n=1; 12.5%) and Transect 1 (n=2; 25%) areas. Two (25%) were uncovered in Midden 2 and a single grinder (12.5%) was found in Midden 1. (Table 19: Figure 35).

b. Conclusion – Interpretive Implications

If the concentration of grinding stones in Pit 2 of Midden 1 is ignored, most remains are concentrated in the central area of the site. The distribution of upper and lower grinders indicates that the grinding of grain or other material occurred in both the central and domestic activity zones.

5. Bone

a. Data description

- Bone tools: Bone tools were found in all the excavated areas at the site, including the Mound (n=38; 51%), Dung (n=32; 43.24%), Transect 1 (n=1; 1.35%), Midden 1 (n=1; 1.35%) and Midden 2 (n=2; 2.7%) except for Transect 2, and Midden 3 (Table 20; Figure 36).

b. Conclusion – Interpretive Implications

Bone tools are used in the production of material goods, such as awls and needles used in leather working these activities. Bone tools were found in all the areas except for

Transect 2 and Midden 3, which has been identified as a domestic residence and potential refuse area.

6. Storage Pits

a. Storage Pits - Data description

- There are dung lined grain storage pits found in Middens 1 and 3 (See figure 3).

b. Conclusion – Interpretive implications

Storage pits are only found in Middens 1 and 3. Such a distribution of storage pits amongst multiple huts matches the expectations of the Village model, which calls for clusters of households to control their own resources. The storage pits in Midden 1 and 3 may represent two separate household clusters and hence meets the definition of a village.

7. Byre locations

a. Byre location - Data description

- There is a single byre found in the central portion of the settlement.

b. Conclusion – Interpretive implications

The single byre would indicate that the community communally stored their cattle in the central zone of the site. This is what would be expected if the site was a homestead. Villages tend to have more than one byre to house cattle (See Whitelaw 1994).

8. Conclusion – Horizon 2

All the artifact and feature distributions, except pit locations and metal and slag indicate that the settlement was a homestead during the 2nd Horizon. However, the data shows that Midden 2 was used differently than the other two domestic middens. Midden 2 contained a granary, but no storage pits while Midden's 1 and 3 contained storage pits

but no granary. Midden 2 could be an extension of a family cluster related to Midden 1 or 2, however, the large distance between areas brings this into question.

C. Horizon 3

Horizon 3 was not investigated because the artifacts were not useful for the analysis.. The data available represents abandonment activities of the settlement. The archaeological record, in this case, does not allow for a refinement of the rate of abandonment down to the hut level, which would have been useful to apply to the analysis (see Robbins 1973).

IV. Discussion – by area

Each area will be discussed stating what type of activity took place based on the artifact and feature concentrations.

A. Horizon 1

1. Mound area

The constellation of activities in the Mound Area are grain storage (granaries), serving and short distance transport/storage (ceramics) indicate that this zone was male orientated during Horizon 1. It was mainly used to store goods, which can be seen in the high amounts of storage/transport containers (also used to hold beer) and evidence of an above ground granary. Other features include a hut floor (living space), hearth (cooking), and bone tools (textile manufacture and repair). It can be hypothesized that this area was not a domestic area, but was a male related zone, which can be seen in the lack of cooking, control of grain storage and plentiful serving and storage/transport vessels. In terms of the ethnographic literature, there is generally an area where men can congregate, discuss politics and consume beer. The artifacts and features point towards these activities taking place in the Mound Area during Horizon 1.

2. Transect 1

Transect 1 was a domestic abode during Horizon 1. This area was used mainly for the preparation (grinding stones) and cooking (ceramics) of foods. Transect 1 contained over eighty percent of the upper grinders and fifty percent of the lower grinders, while over seventy-five percent of all ceramics from the area were identified as cooking pots. The ethnographic literature would indicate, based on the artifact types located, that the activities in this area were of a female nature.

3. Transect 2

The light dusting of artifacts found and lack of features probably indicates that this area contain artifact spillover from the inhabited area to the North, South and West of Transect 2. No features were found in Transect 2, only a small amount of cooking and storage/transport vessels were found.

4. Dung Area

The Dung area during the first Horizon was used as domestic area and cattle byre. The Dung Area was a multifaceted activity area. The whole gambit of artifacts and features were found in the Dung Area, however, none in significant numbers. There is evidence of food preparation (grinders), consumption and storage (ceramic vessels), iron working (slag and ore), grain storage (granary daga) and bone tools (textile manufacture and repair).

5. Conclusion for Horizon 1

The unequal distribution of ceramic types could be interpreted to indicate either that:

While people prepared their meals in Transect 1, they chose eat in either the

Mound or Dung Areas, or

Women prepared and ate food (out of cooking pots) in Transect 1, and served to men elsewhere (where food is not prepared, but where grain is stored, beer is served, etc.).

The more probable interpretation is the first because through ethnographic analogy, we know that there are female and male locals. At Ndondondwane, the male zone is the Mound Area. The lack of cooking ceramics and high volumes of serving and storage/transport vessels perpetuate this notion. Ethnographic analogy also tells us that men are in charge of grain storage, but women grind the grain. There is evidence of grain storage in the Mound Area while no grinding stones were found. The Dung and Transect 1 areas are locals used for the grinding of grain, ethnographically associated with women. While Transect 1, was a domestic domicile, the Mound area and male orientated zone, the Dung Area is more of general meeting and activity area based on the numerous and variety of artifacts found there. There is evidence for one domestic and two non-domestic areas. This pattern indicates a homestead pattern of behavior. The presence of a single livestock enclosure supports this conclusion.

***2. Horizon* 2**

1. Mound Area

The Mound Area in Horizon 2, which is now the central zone of the settlement, continues to be used mainly for beer consumption. Over seventy percent of the Transport/storage ceramics came from this area. This follows the ethnographical expectations which state that the central zone is controlled by men and is used for activities associated with men (i.e. meeting zone to discuss settlement issues). There is also evidence in the Mound Area for textile manufacture and repair, this activity has also

been associated with men (Whitelaw pers. Comm.; Junod 162; 98-104). Although there are grinding stones, these occur is low frequency in most inhabited areas during this Horizon.

2. Dung Area

Even though this area was used for all activities during Horizon 1, it now has become more specialized, although it still contains the cattle byre. The Dung Area in Horizon 2 becomes a zone mainly used for some storage (storage/transport ceramics) and the preparation and consumption of food. The only activity of any significance, is the textile manufacture and repair.

3. Transect 1 and Transect 2

The lack of high densities of artifacts, and since the area is void of features, Transects 1 and 2 were probably not extensively used during the second Horizon. However, Transect 1 did contain almost half of all the slag found at this level. This could have been the main location of the forging of metal artifacts. The large amounts of ore and slag represent debris from the nearby furnace which post-dates the site

4. Midden 1

The artifacts and features in Midden 1 point towards it being a domestic area during the Horizon 2. Almost seventy percent of all the cooking ceramics from this horizon came from Midden 1 indicating it being a main area for food preparation, with little of the food actually being consumed there (lack of serving vessels). There were also storage pits, a hearth, hut floor which point towards it being a domestic area.

5. Midden 2

Midden 2 is probably a domestic area based on the artifacts and features

excavated. It is non-descript except for the fact that it was the only activity area in the periphery of the settlement that contained above ground grain storage and no storage pits. Otherwise, there is evidence of food preparation (grinding stones, cooking ceramics), food consumption (serving ceramics) and storage (storage/transport vessels and granary daga) however, in all relative low numbers.

6. Midden 3

Midden 3 was a domestic area during Horizon 2. It held the greatest amounts ceramics, more than that of all the other areas added together. Out of all the ceramics found, the majorities were used for serving, which may explain why over fifty percent of all the serving ceramics found came from Midden 3.

7. Conclusion for Horizon 2

Horizon 2 represents the largest inhabitation of the settlement. There are three domestic areas and two specialty zones. The addition of three new domestic areas in the outer periphery of the settlement probably represents the addition of new wives. The outer activity zone domesticity is indicated through the preparation food preparation, consumption and storage ceramics. Midden 2 contained a granary and no storage pits, while the other two Middens contain only storage pits. This may indicate an association with one of the other domestic areas or in conjunction with the higher amounts of ceramics found in the other two domestic middens, may indicate that Midden 2 came after Middens 1 and 3 were established However, the distance between huts does not support this hypothesis and it is impossible, with the available data to ascertain the exact times each hut was established. Another interpretation might be the presence of a granary foretells the imminent dispersal of the eldest son, who is gaining more responsibility at

the homestead. The central zones (Mound, Dung and Transect 1) have specialty functions which can been seen in the high percentage of bone tools (used in textile manufacture) which can be associated with both men and women and grain storage (associated with men). The Mound Area contained the highest frequency of storage/transport ceramics indicating that the majority storage or consumption of fluids occurred there.

V. Conclusion

The feature and artifact distributions applied to the Homestead and Village models, indicate that the settlement was probably a homestead during both Horizon 1 and 2.

In Horizon 1, the artifacts and features indicate that there was one domestic area, with two other specialized activity areas. Transect 1 was where most of the food was prepared (grinding stones, and cooking ceramics). The Mound Area is where men sat around and drank beer (storage/transport vessels). By implication (men orientated zone), the grain storage also occurs in this zone. The one domestic and two specialty activity zone, in conjunction with the single byre, point towards the settlement being a homestead during Horizon 1.

During Horizon 2, there are three domestic areas and two specialty areas. The three domestic areas occur in the outter periphery of the site and are associated with women's activities. The central zone contains two activity areas which are associated with mens activities. During this Horizon, the settlement was a homestead with numerous wives abodes.

The distribution of remains for Horizon 3 was plotted, but did not contain any artifacts or features, as it represents the abandonment and post abandonment phases at the

site.

CHAPTER 7 - CONCLUSION

I. Introduction

This thesis explores the nature of an EIA site in order to answer the question whether the settlement was a homestead or a village. It uses the artifact and feature distributions from one of the major type sites for the EIA of southern Africa (Ndondondwane) in order to accomplish this goal. This site was chosen because it is the only excavated EIA site that was excavated in a manner that allows for spatial analysis and because of the relatively short span of habitation (less than 100 years - van Schalkwyk et al. 1997). It also uses the ethnographic literature on household structure, organization, and growth and decay cycles in order to enhance our understanding of the archaeological data from the site.

II. Summary of analytical procedure

Five steps were taken to to complete the analysis. They consisted of data gathering, map generation, activity area identification, artifact distribution and comparison.

The initial step included gathering all the quantitative data from the previous excavations. This information was entered into Excel and later exported in ArcView to facilitate analysis.

Second, once the quantitative data was entered into Excel, digital maps were created in order to properly visualize the information. Hand drawn maps and maps from each of the excavations were digitized in ArcView. The artifact data were then added into the analysis. This process allowed for the extent of activity areas, based on both feature and artifact distribtuion, to be established.

The third step was activity area identification. The identification was based on the distribution of features and artifacts. While some activity areas were identified during the excavation, others were only identified during the analysis. Large activity areas identified during the excavation include the Dung, Mound, and Transects 1 and 2 in the center, and Middens 1, 2 and 3 in the periphery of the settlement.

Fourth, a comparison of the distirbution of artifact types (the number and volume of the artifacts) against the features (e.g. storage pits, hearths) was accomplished to determine if they were associated with various proposed activities (e.g. the preparation of food). The Chi squared statistic was used on the ceramic information to determine if their distributions were significant.

The fifth step was to test whether the settlement was homestead or village. Flannery's (1976) household cluster concept and the African ethnographic literature were used to create a list of criteria to assist in the identification of homestead or village. Theoretical expectations of the types and distributions of different activities, each of which leave a unique archaeological residue, associated with each settlement type were generated. The model predicts that if the site was laid out according to the Village model, there should be replication over the site of certain activities. This will be especially true of domestic areas. For example, the hypothesis states that if several superhouseholds are present, there should be replication of the means of production in each domestic area. If the site was organized along the lines of the Homestead model, there should be less replication and more complementarity in activities between activity areas.

Sixth, the data from Ndondondwane were then tested against the expectations for the presence of single or multiple households in the settlement.

III. Summary - review of results

Even though Ndondondwane contained three micro-temporal horizons, only the data from the two earlier (Lower and Middle) were utilized in the analysis. The last (Upper) horizon post-dated the main occupation and was a specialised activity (iron smelting). The results of the analysis on the two Horizons are discussed below.

A. Lower Horizon (H1)

The Lower Horizon (H1) represents the initial setting up of the site. During this time, there is one domestic residence and two specialty areas. Transect 1 is the domestic residence. The Mound Area contained a hut and above-ground granaries, but appears to be associated with male activities. The Dung Area was a more generalized activity area and not associated with a specific gender. A variety of activities occurred in it, including livestock corralling (for cattle and caprines), iron forging, large-scale meat roasting, a midden, and a residence. This distribution of activities indicates that the settlement was a homestead during this horizon.

B. Middle Horizon (H2)

The Middle Horizon (H2) is when the settlement reaches its greatest size. There are three domestic residences and two specialized activity areas during this period. The central zone becomes more defined male-oriented in terms of activities. The Mound Area continues to be and the Dung Area becomes more male-dominated. The two central areas, the Dung and Mound Areas, were specialty activity zones. The Dung Area contained a livestock enclosure (for cattle and caprines), an iron forging locus, and a midden zone where remains from all over the site were disposed into or at the edge of the byre. The Mound Area is where male initiation ceremonies and ivory processing took place. Female activities appear to be more restricted to the outer zone. Three domestic

areas are found in the periphery of the site based on concentrations of artifacts and features, and information gleaned from the ethnographic literature. Each included residential structures, iron forges, grain storage, and middens. The distribution of activity areas indicates that the settlement was a homestead during this horizon.

IV. Discussion - Ndondondwane and the domestic cycle

Fortes' (1969) identified three major phase in the domestic cycle in an African context. This pattern fits the data from Ndondondwane. The phases of expansion, dispersion and replacement are all evident from the studied site.

The Expansion phase is when the domestic unit is founded after marriage to the first wife (in a polygynous society) to the end of the wife's child-bearing years (c. 20 years). Archaeologically, it would coincide with the establishment and early years of a homestead. The household is oriented around a single set of structures initially. As more wives are added, each wife obtains her own residence and the settlement grows. However, wives huts tend to be located very close to the husband's central residence.

The next phase (Dispersion) begins with the marriage of the first-born and continues until all the children are married. This is a lengthy period of time, especially in a polygynous society, and can last for as long as forty years. In this phase, the residences of each son (and his wives) are dispersed at varying distances around the father's.

The final phase (Replacement) occurs with the death of the father and his replacement in the community's social structure by his offspring. In many southern African cultures, this is the point when the settlement is abandoned.

As will be seen below, this sequence matches the archaeological record at Ndondondwane.

A. Expansion at Ndondondwane

Horizon 1 represents the initial establishment of the settlement. The settlement includes a cattle byre and a single clear domestic residence. There is a small hut where men gathered (Mound Area), and a more general activity area (Dung Area, human and livestock zones). It would appear that the new settlement is founded by a husband and his wife beginning their domestic cycle. Since there is only one clear domestic unit present during Horizon 1, it can be assumed that there was only one wife at this time.

As more wives are added, it is expected that additional structures would be found in the immediate surroundings. Structures for wives are kept relatively close ethnographically. The structure in the Dung Area may represent that of a second wife and her children, but it is not entirely clear because many of the activities would be performed in and around the hut of the first wife.

B. Dispersion

The Dispersion phase begins with the marriage of children. Children's huts are generally located farther away than the huts of wives (see Ruel 2000: 66).

This would explain the new pattern of activities found in the Middle Horizon at Ndondondwane. Three new activity areas (domestic) appear in now the outer zone of the settlement and domestic activities disappear from the central zone. One of the domestic areas (Midden 3) has dramatically larger amounts of debris than the other two. This would imply that it was used for a longer period of time or was the locus where residents congregated most. The temporal analysis of the site does not support the first option. There is no significant difference in time length of occupation between the three domestic middens. Why would the residents congregate in this location more than the others? It is most logical that this is the locus of the father (and his wives) in this horizon. Most

tellingly, the domestic residence of the founding parents in Transect 1 (and possibly that of the second wife in the Dung Area) is abandoned. Where did they go? They possibly went to Midden 3. The appearance and function of the other domestic middens (Midden 1 and 2) are best explained by the marriage of children and the establishment of their households within the homestead. These households will grow as their families develop (with the birth of children and the addition of subsidiary wives). The appearance of major male initiation area in Horizon 2 coincides with the growth of the homestead and larger numbers of males.

C. Replacement

As noted above, replacement occurs with the death of the father and his replacement in the community's social structure by his offspring. In many southern African cultures, this is the point when the settlement is abandoned. Replacement is clearly occurring at Ndondondwane in Horizon 3A as the village is abandoned. The abandonment is clearly an organized communal affair. This is evident in the cleaning up of the site of all grinding stones (as indicated by the pit fillings in Midden 2). Ndondondwane was probably abandoned with the death of the village chief. With his death, the centripetal forces keeping his sons close by disappear. They finally are free to move off and start their own homesteads.

V. Conclusions

The results of the analysis indicate that there is cultural continuity between the ethnographic present and EIA. The synchroneity between the domestic cycle described ethnographically and the evolution of the settlement at Ndondondwane are quite remarkable. It would seem that there was little change in the domestic cycle over the past two millenia in souther African society.

In conclusion, Ndondondwane can be shown to have been a homestead. There is no evidence that it was ever a village. The nature and distribution of activities predicted for a homestead are found in each of the major occupational horizons. It evolves through the domestic cycle from its initial founding through to its abandonment.

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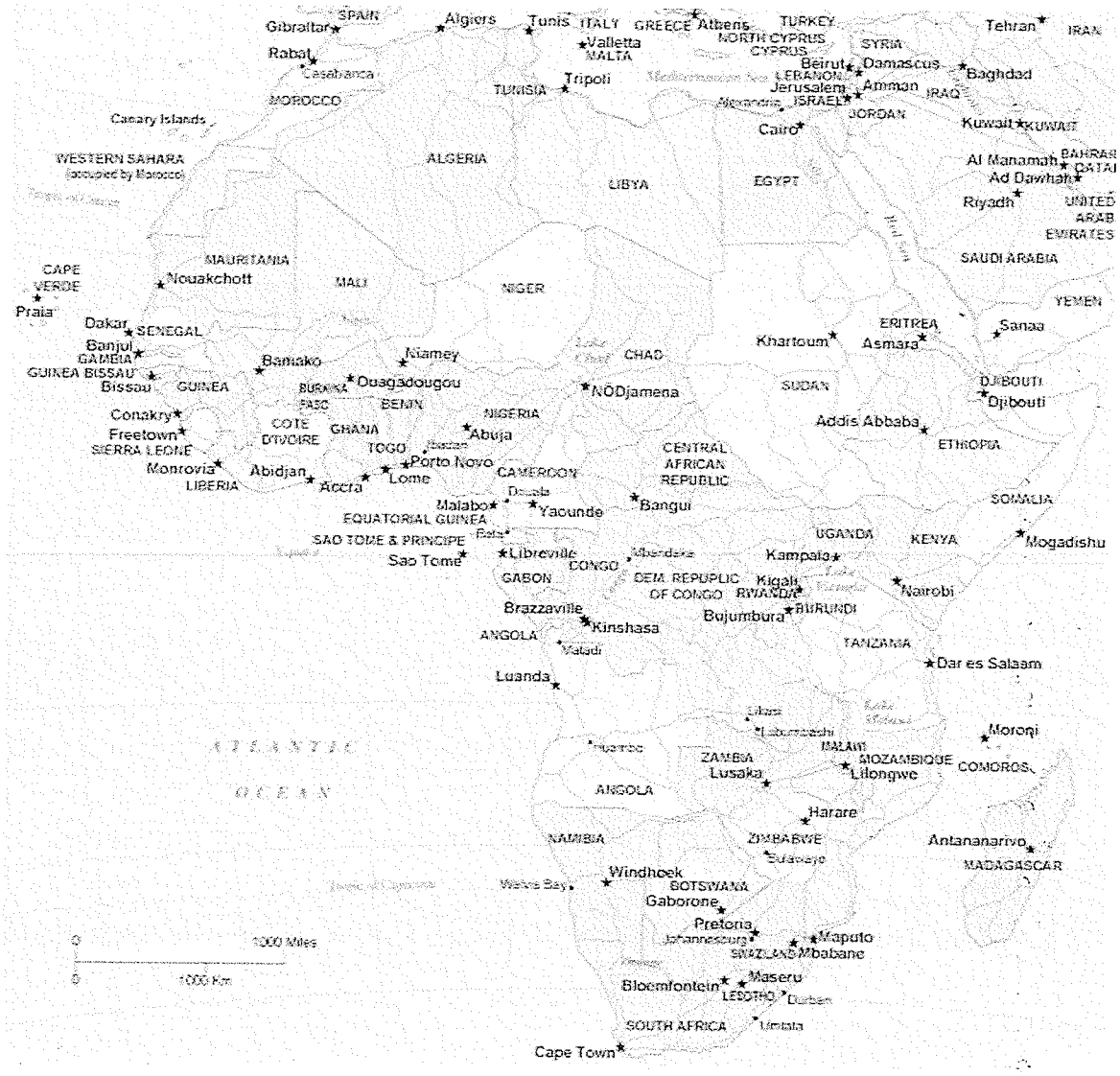
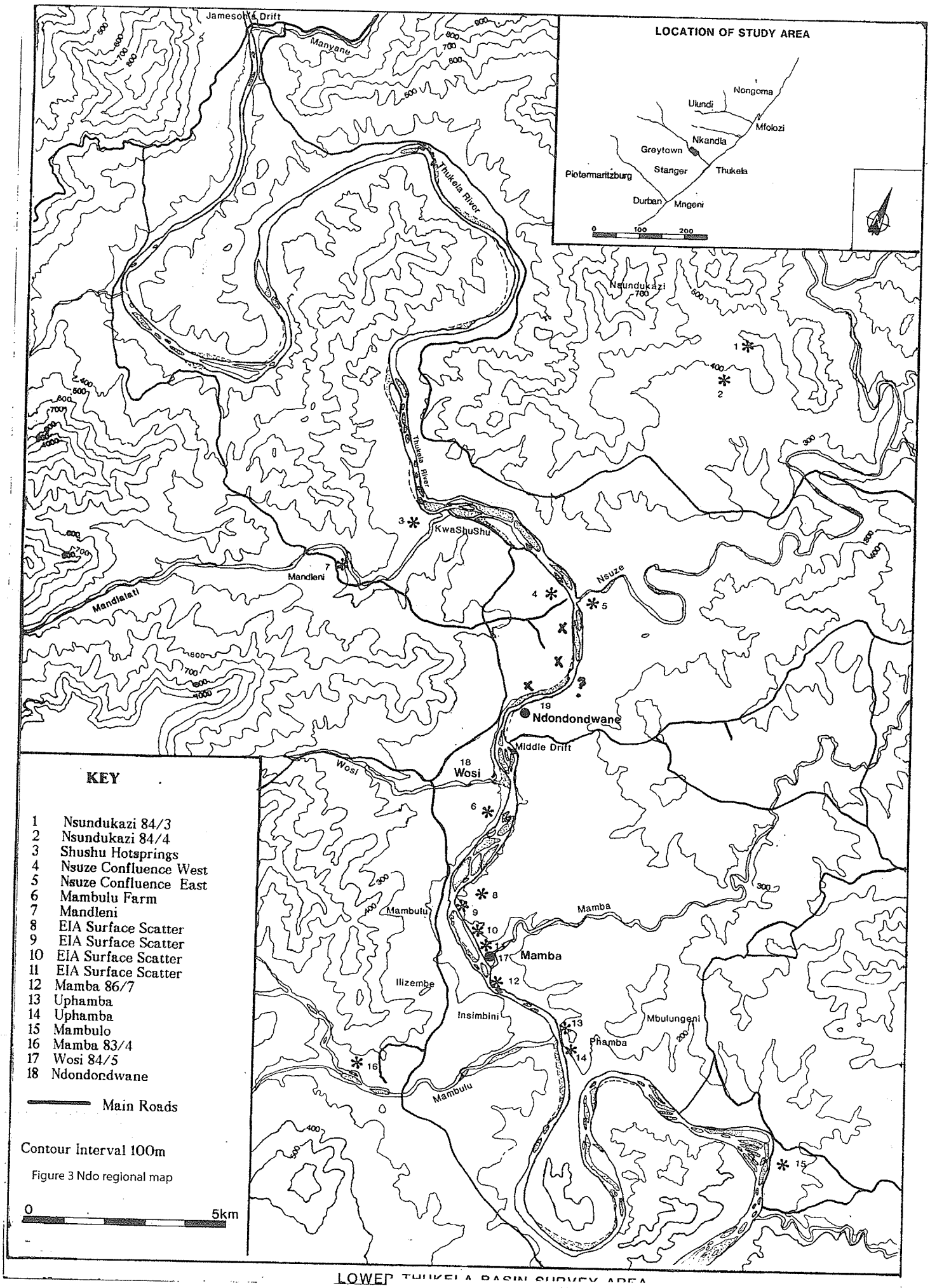


Figure 1 Africa

Figure 2 South Africa



KEY

1 Nsundukazi 84/3
2 Nsundukazi 84/4
3 Shushu Hotsprings
4 Nsuze Confluence West
5 Nsuze Confluence East
6 Mambulu Farm
7 Mandleni
8 EIA Surface Scatter
9 EIA Surface Scatter
10 EIA Surface Scatter
11 EIA Surface Scatter
12 Mamba 86/7
13 Uphamba
14 Uphamba
15 Mambulo
16 Mamba 83/4
17 Wosi 84/5
18 Ndondondwane

Main Roads

Contour Interval 100m

Figure 3 Ndo regional map

LOWER THUKELA BASIN SURVEY AREA

Ndondonwane - Lower Horizon Activity Areas

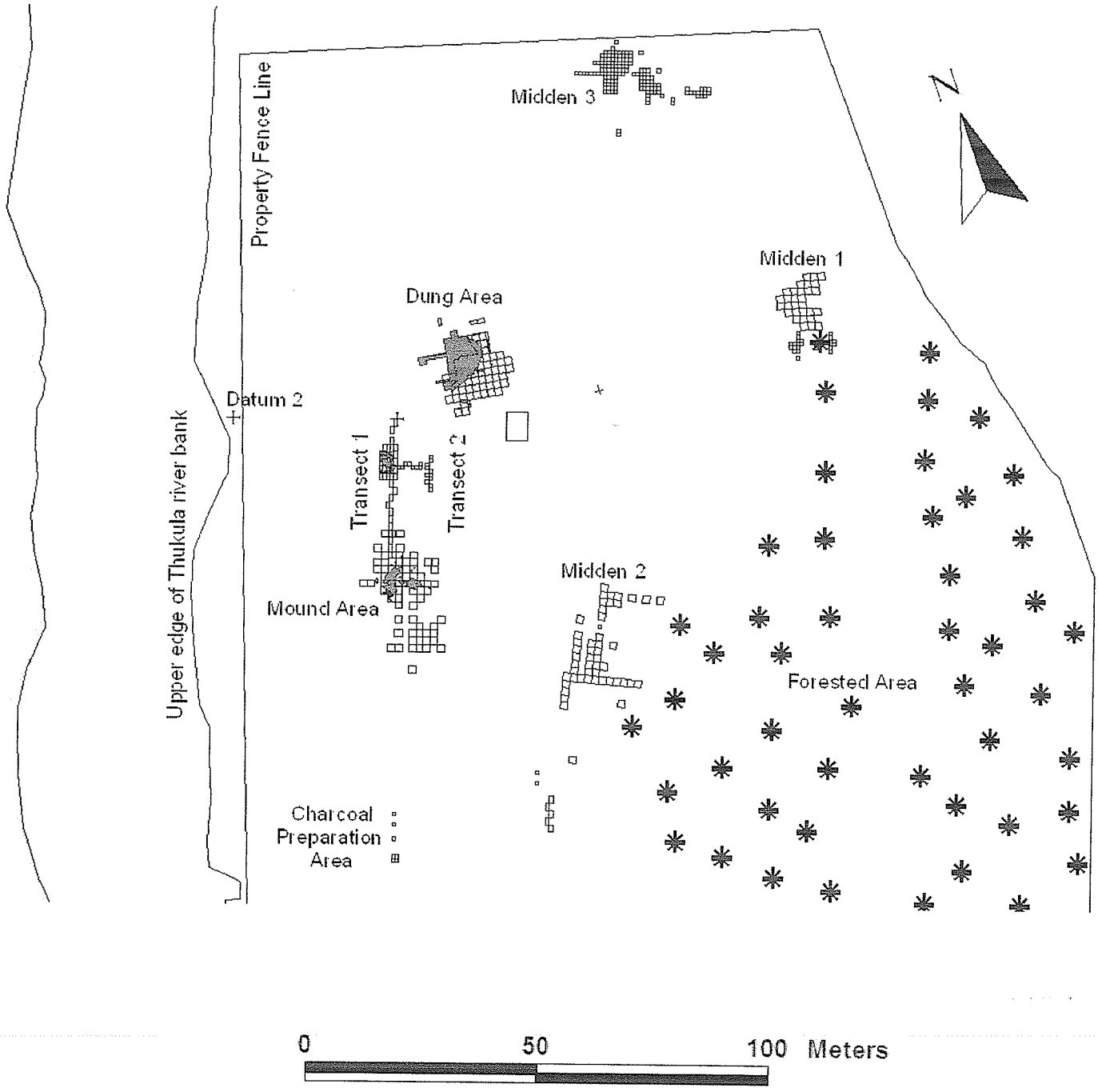


Figure 4. Pans Site Horizon 1

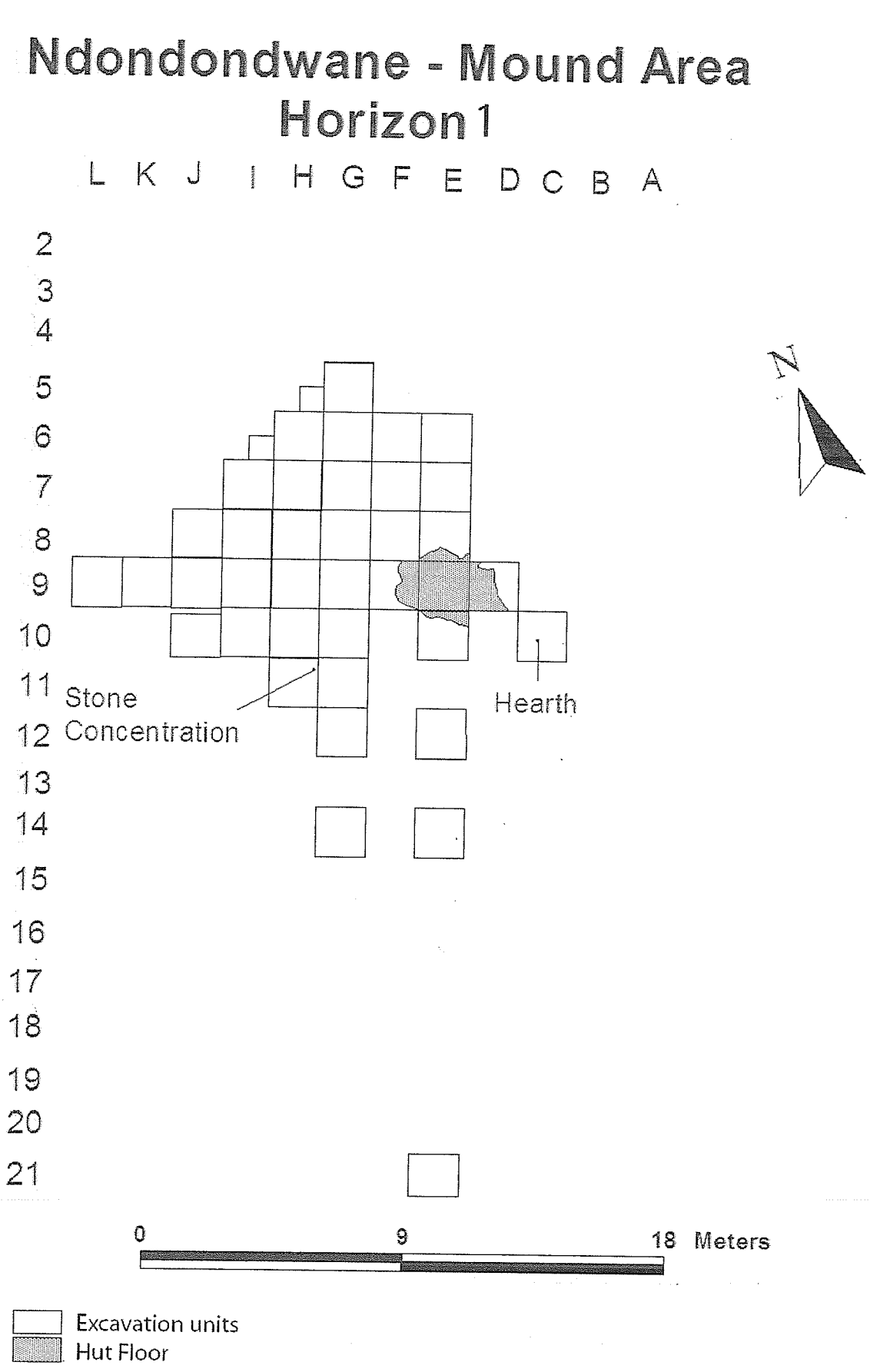


Figure 5 Mound H1

Ndondondwane - Transects 1 and 2

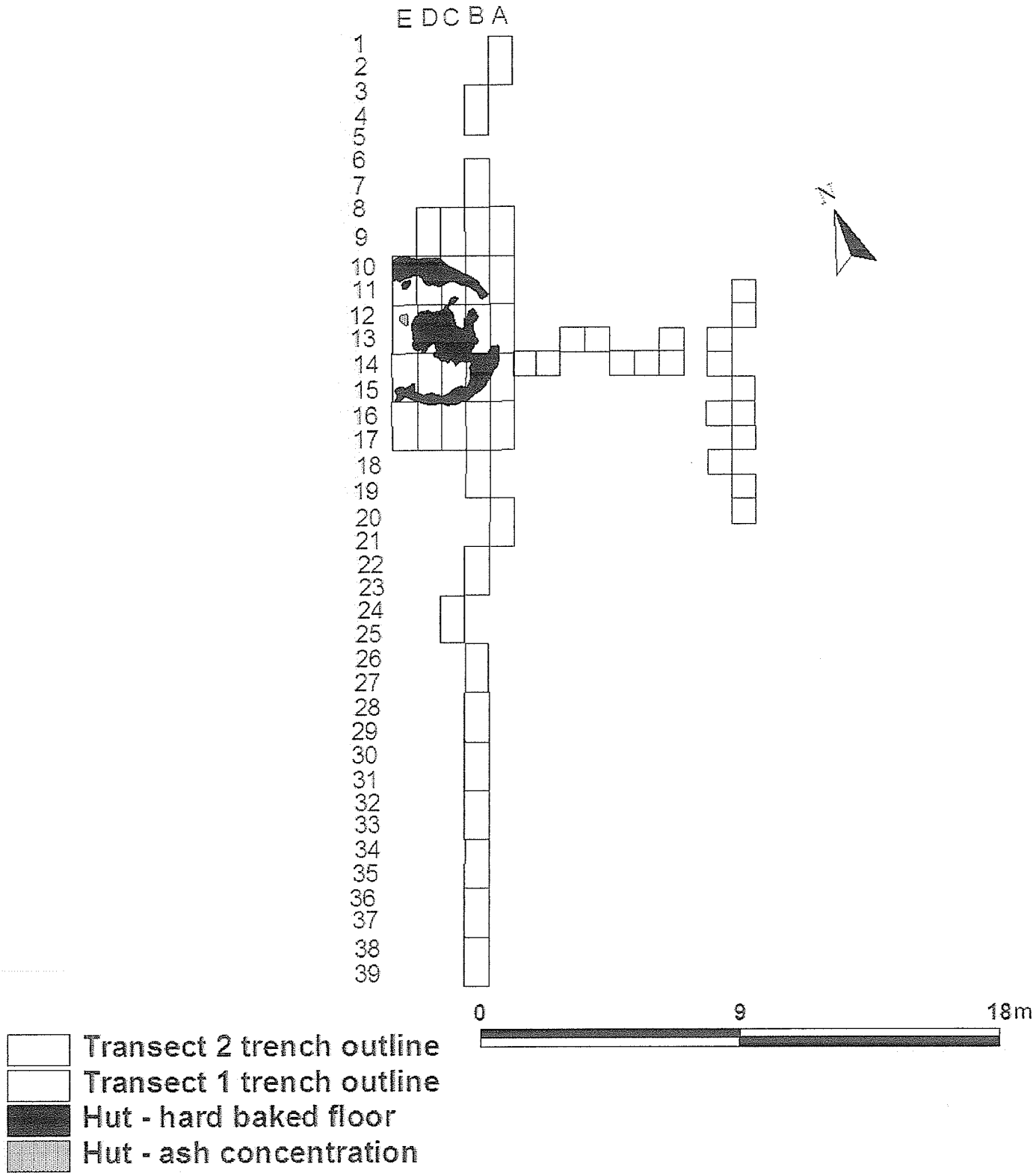


Figure 6 Ndondondwane Transects 1 and 2

Ndondondwane
Dung Area
Features
All Horizons

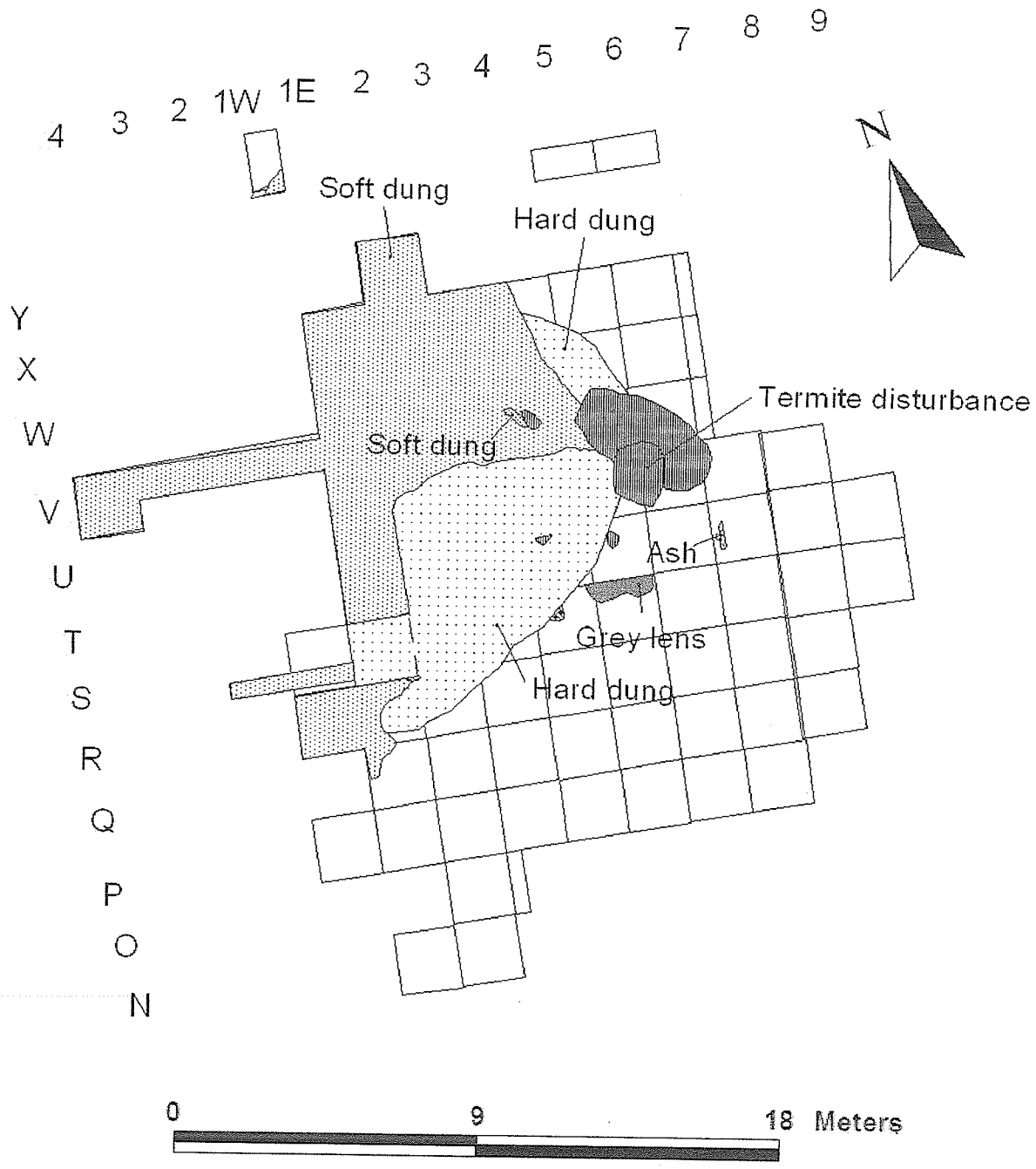


Figure 7 Dung Area Features

Ndondondwane - Middle Horizon Features

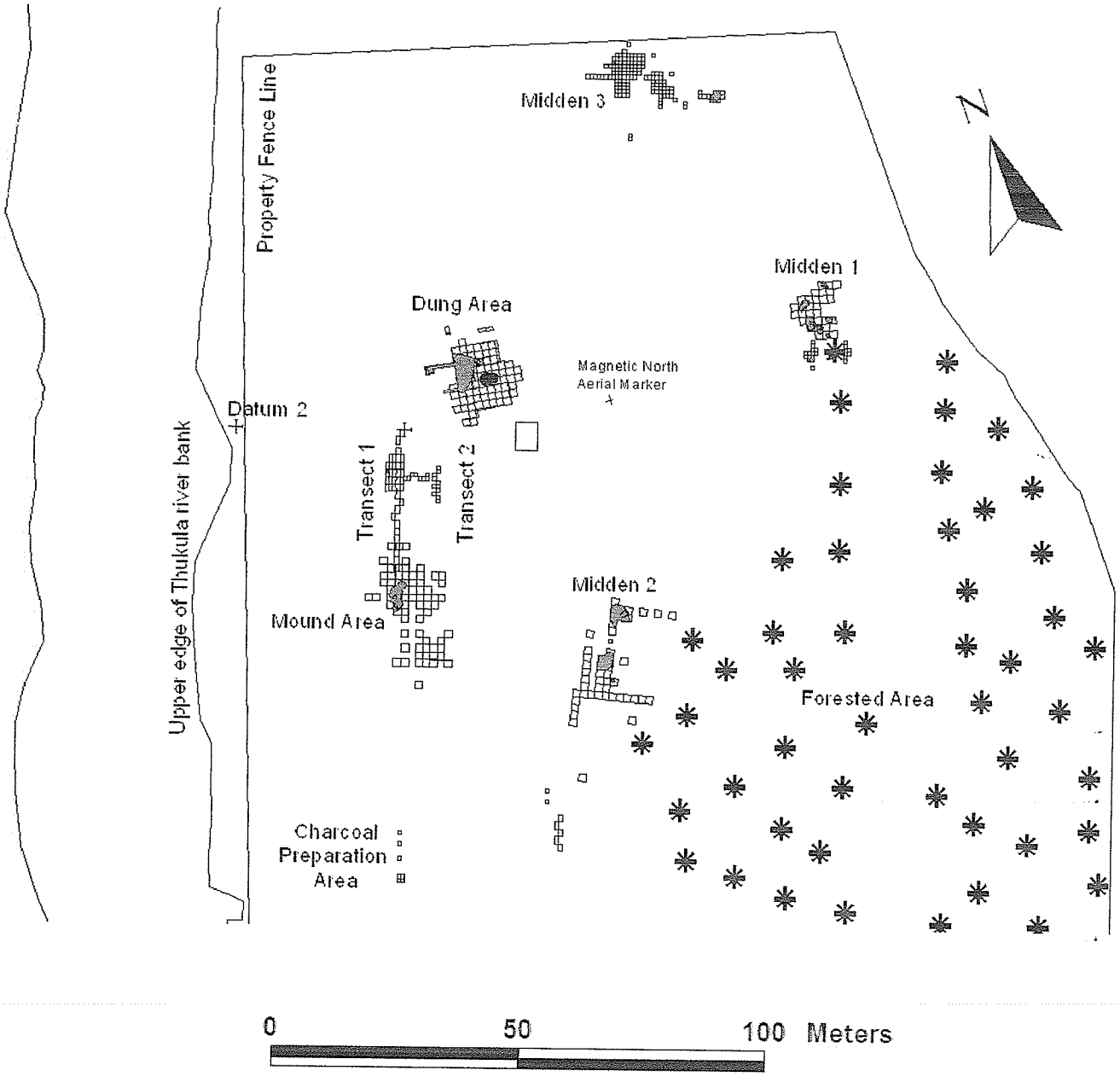


Figure 8 PSH 2

Ndondondwane - Mound Area
Horizon 2

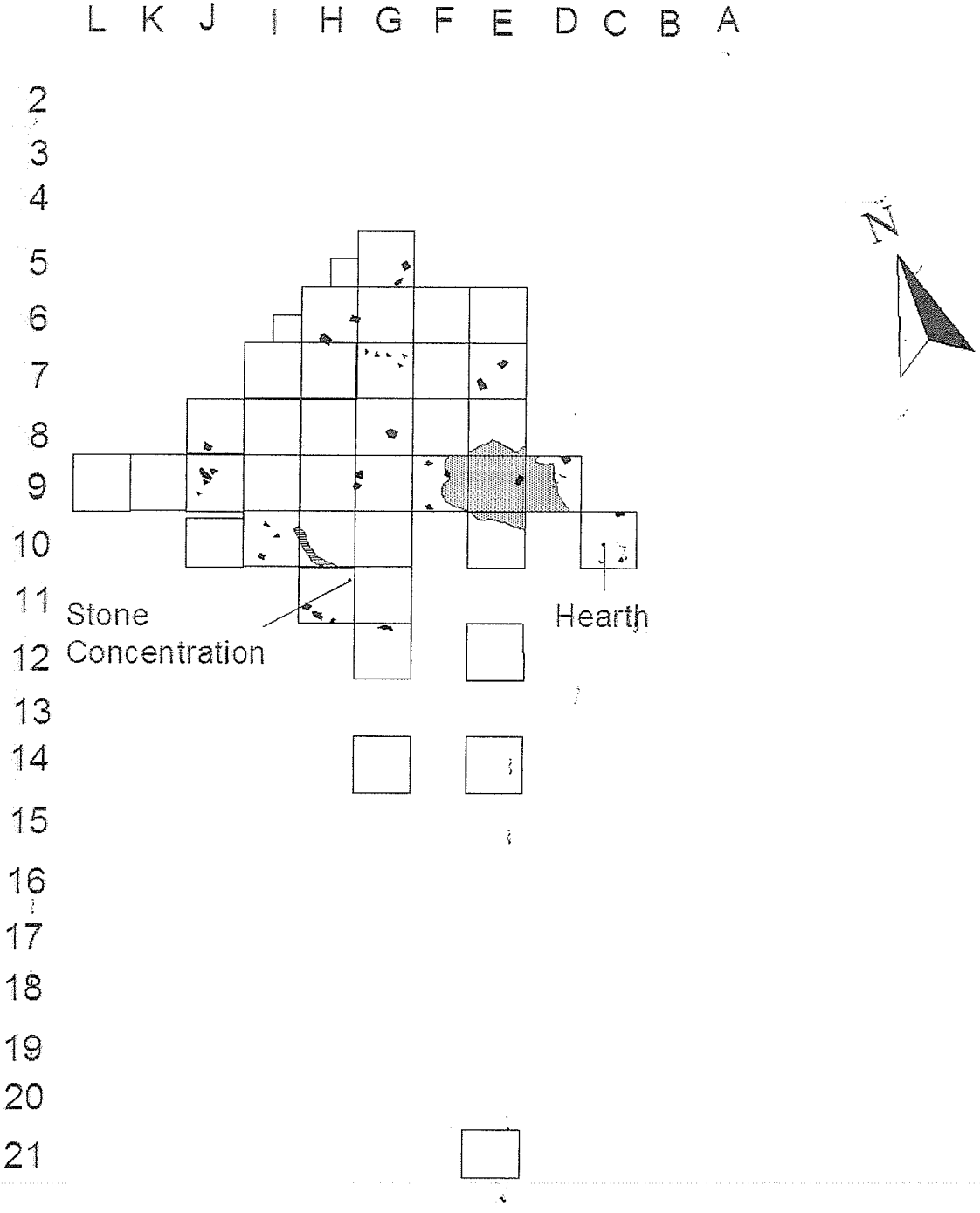


Figure 9 Mound Area features

Ndondondwane
Dung Area
Features
All Horizons

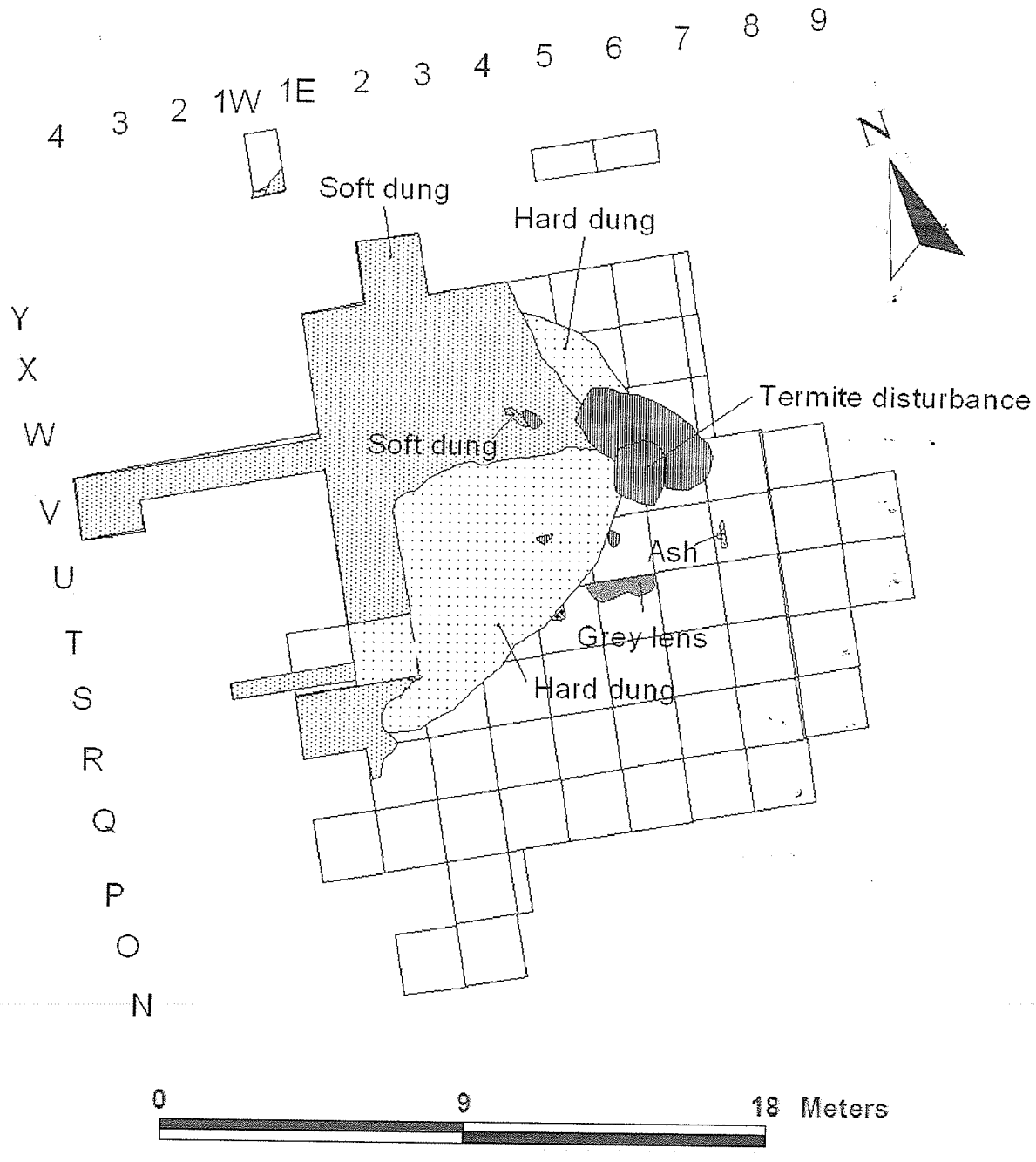


Figure 10 Dung Area H2

Ndondondwane - Transects 1 and 2 Horizon 2

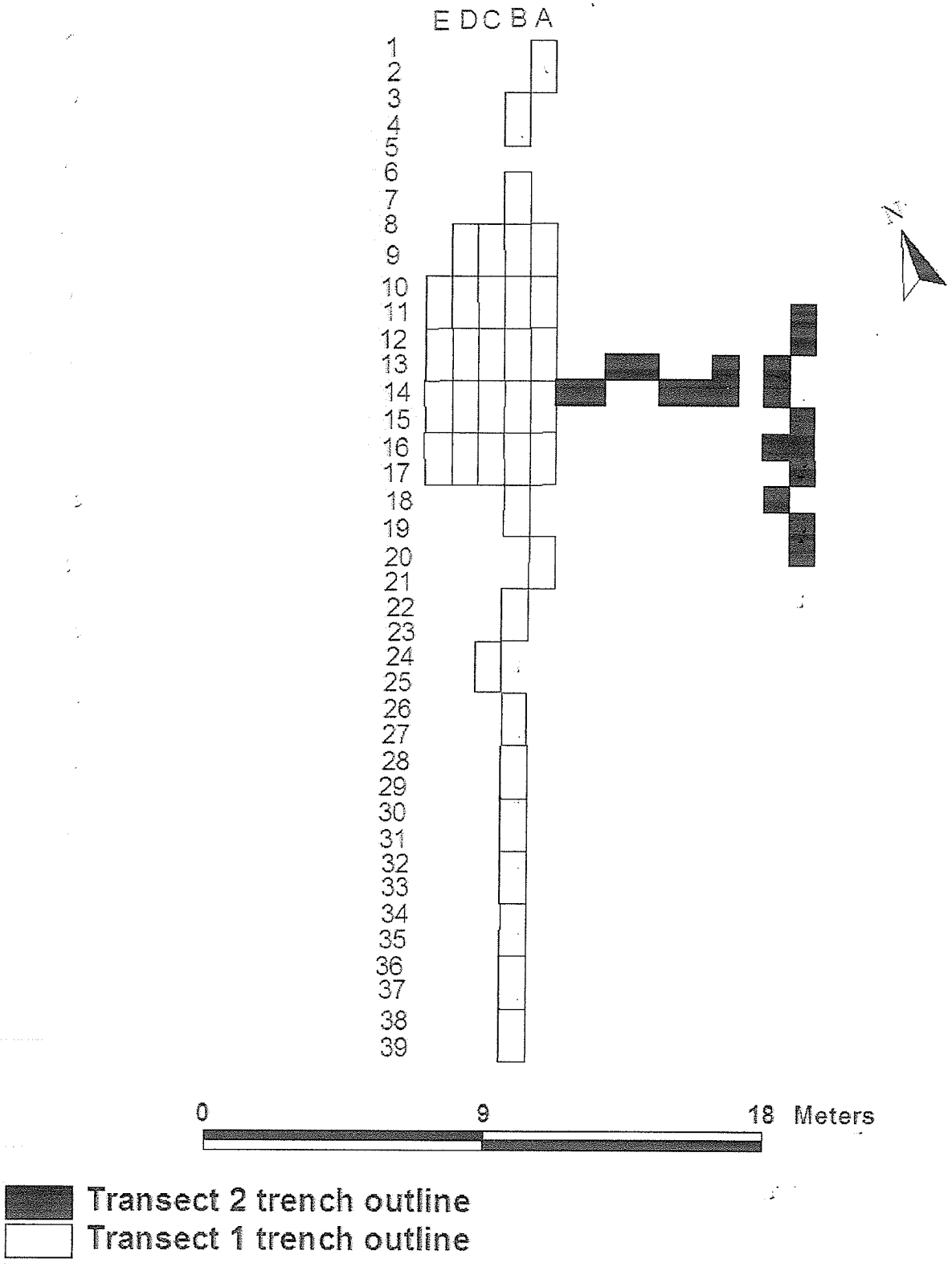
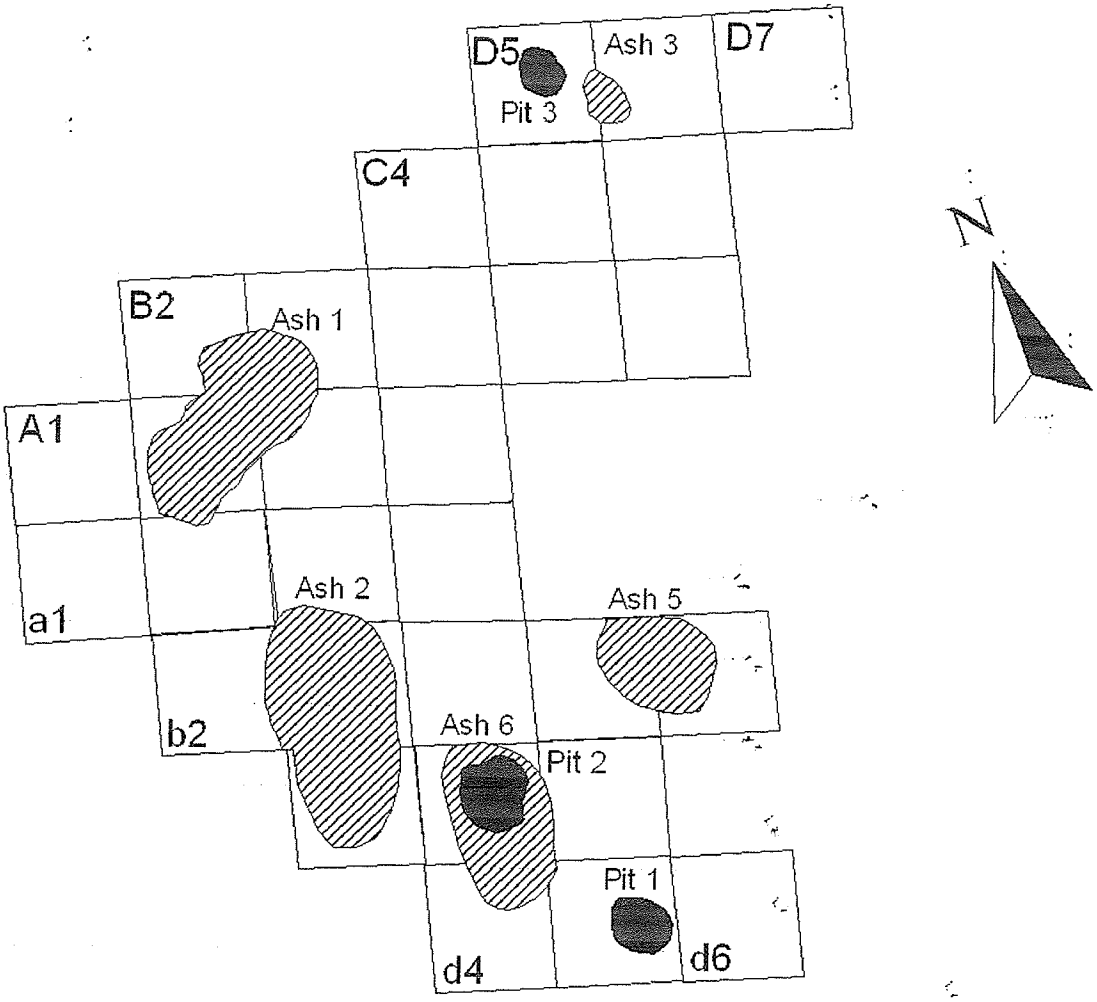


Figure 11 Ndondondwane Transects 1 and 2 Horizon 2

Ndondondwane
Midden 1
Features
Middle Horizon



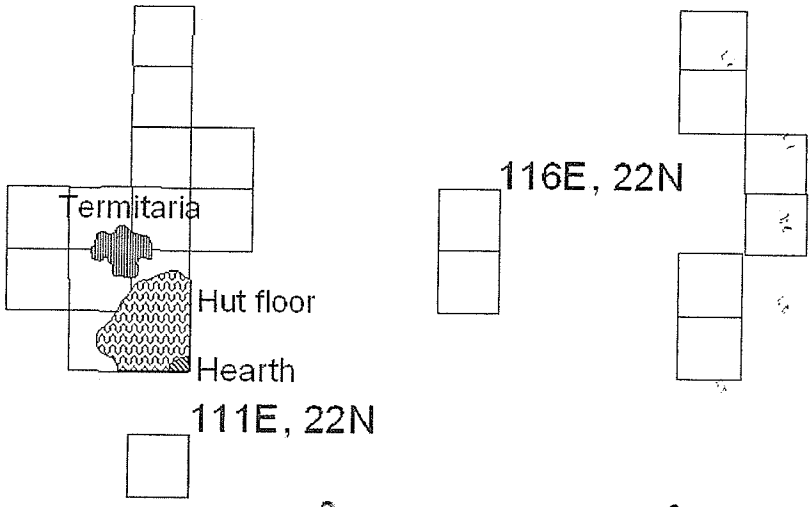


Figure 12 Midden 1 Features

0 9 18 Me

Ndondondwane - Midden 2 Features

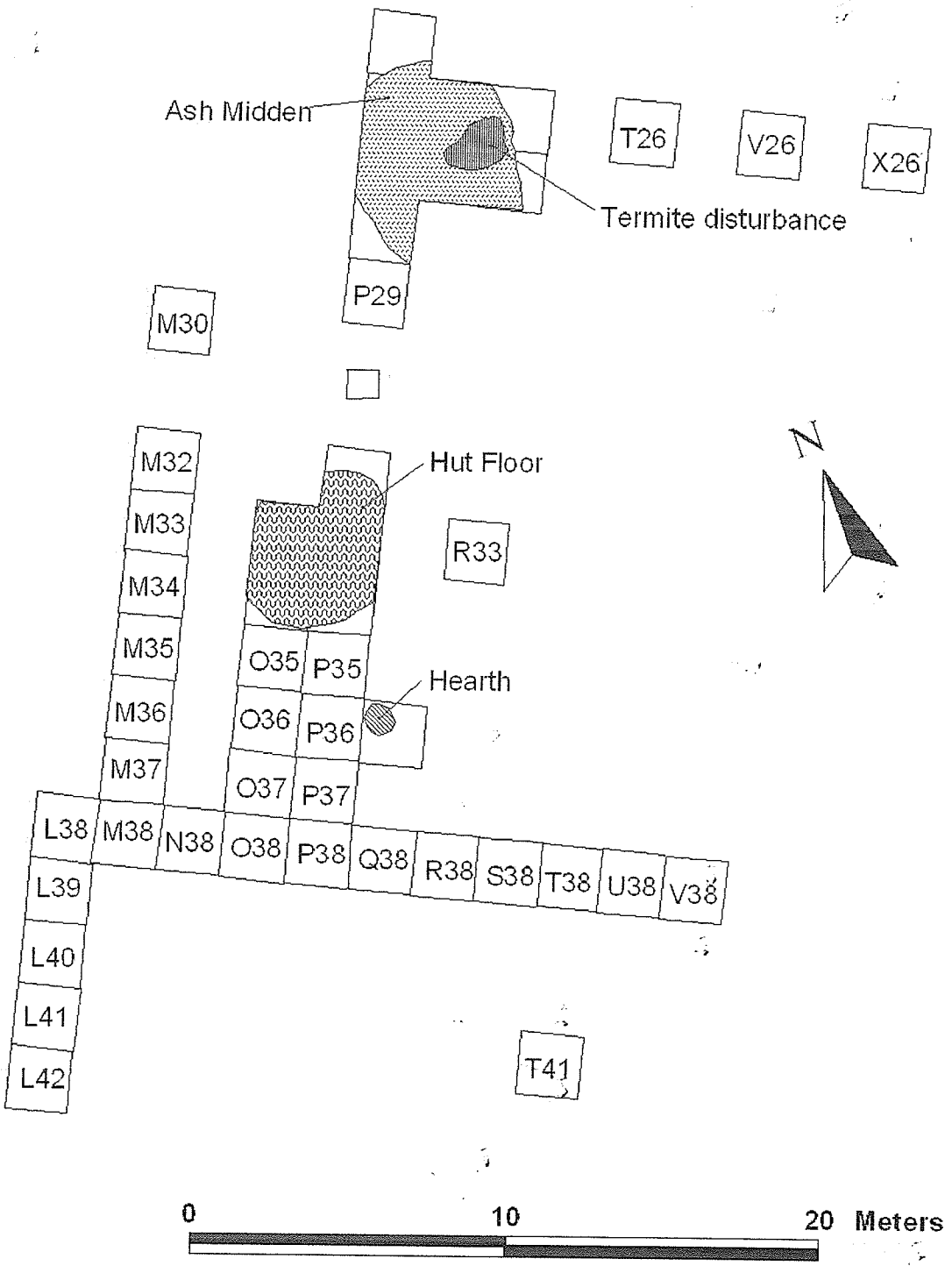


Figure 13 Midden 2

Ndondondwane - Midden 3 Features

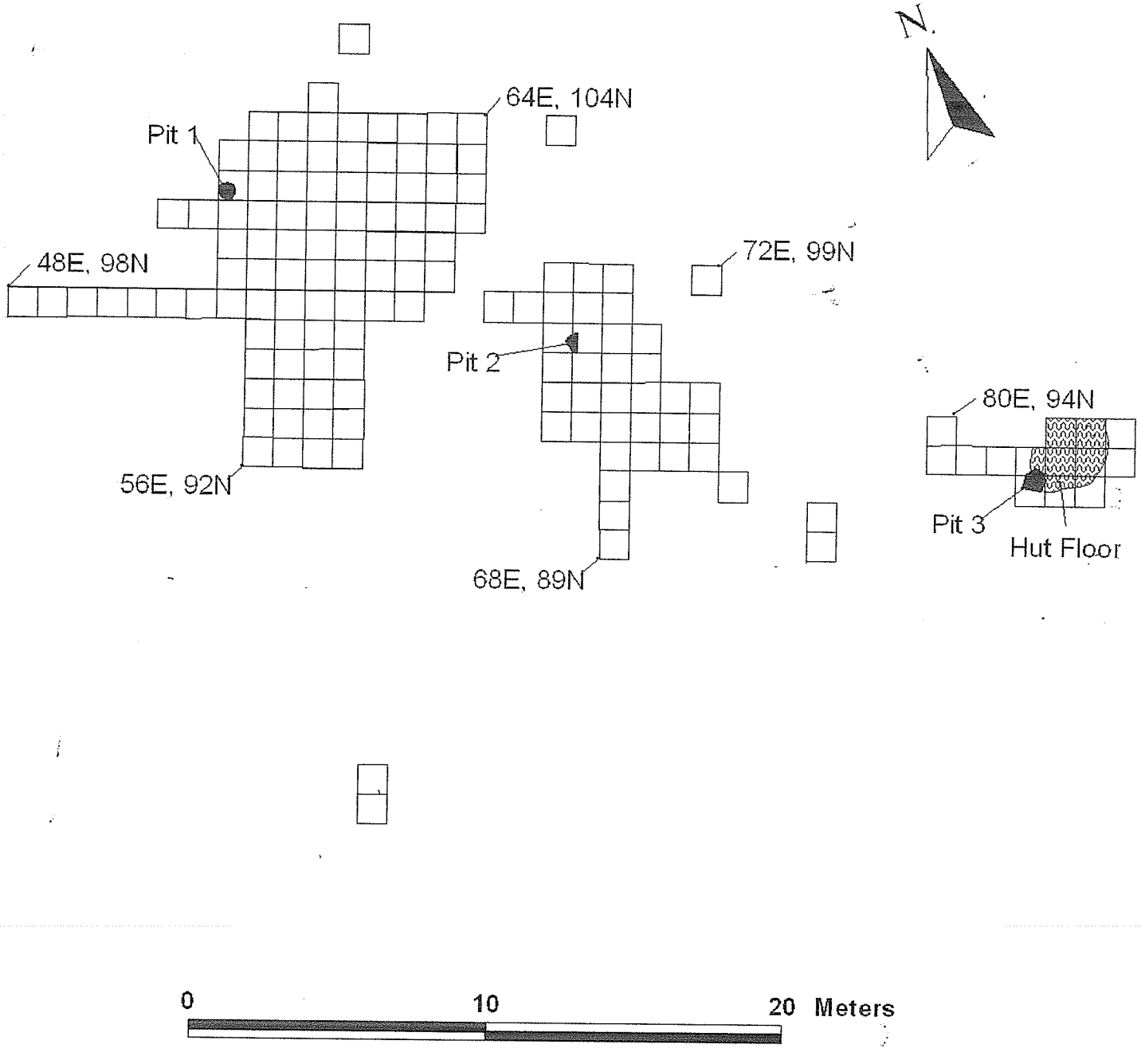


Figure 14 Midden 3 Features

Ndondondwane - Pan Site Horizon 3

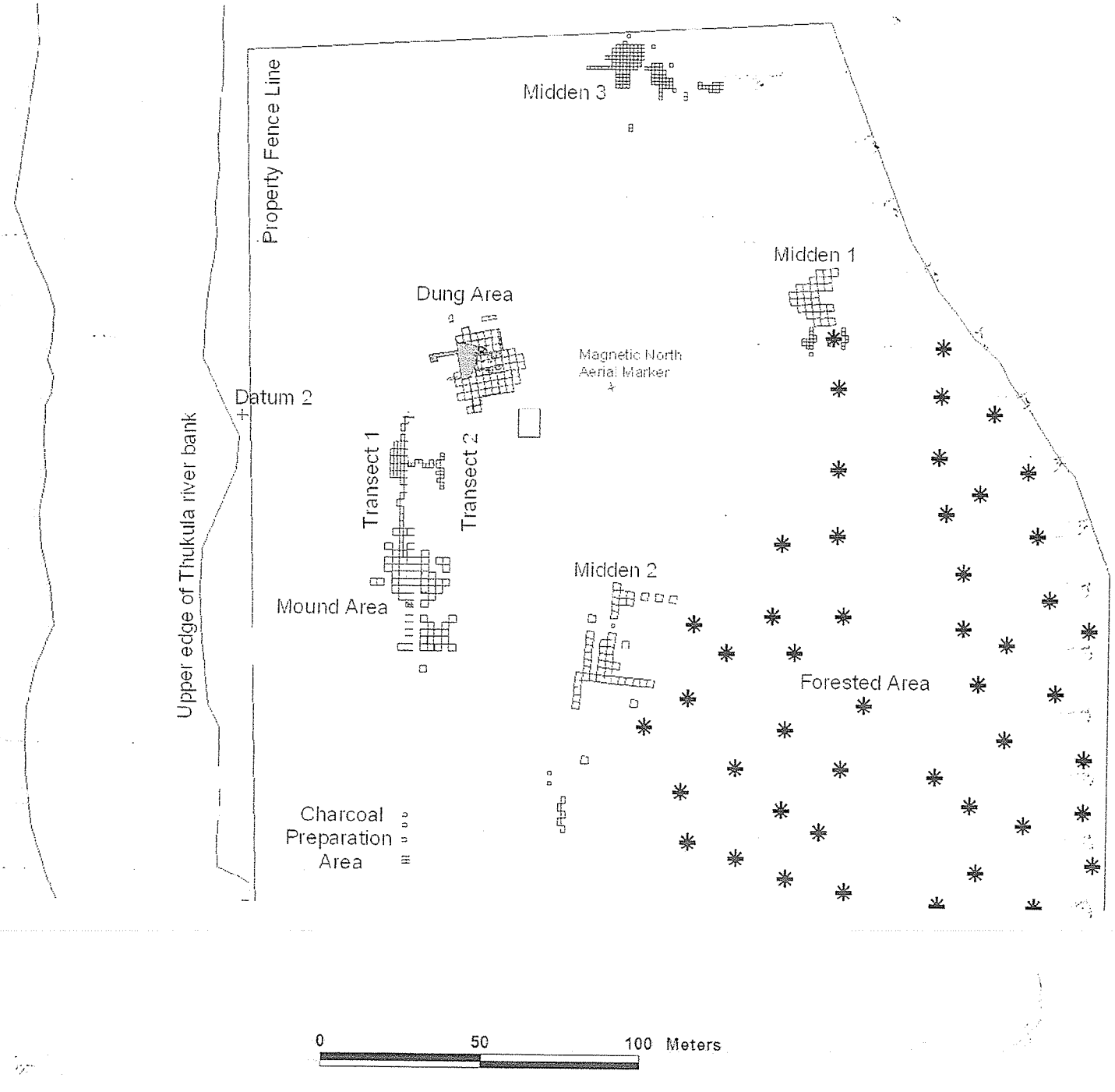


Figure 15 PSH 3

Ndondondwane
Midden 1

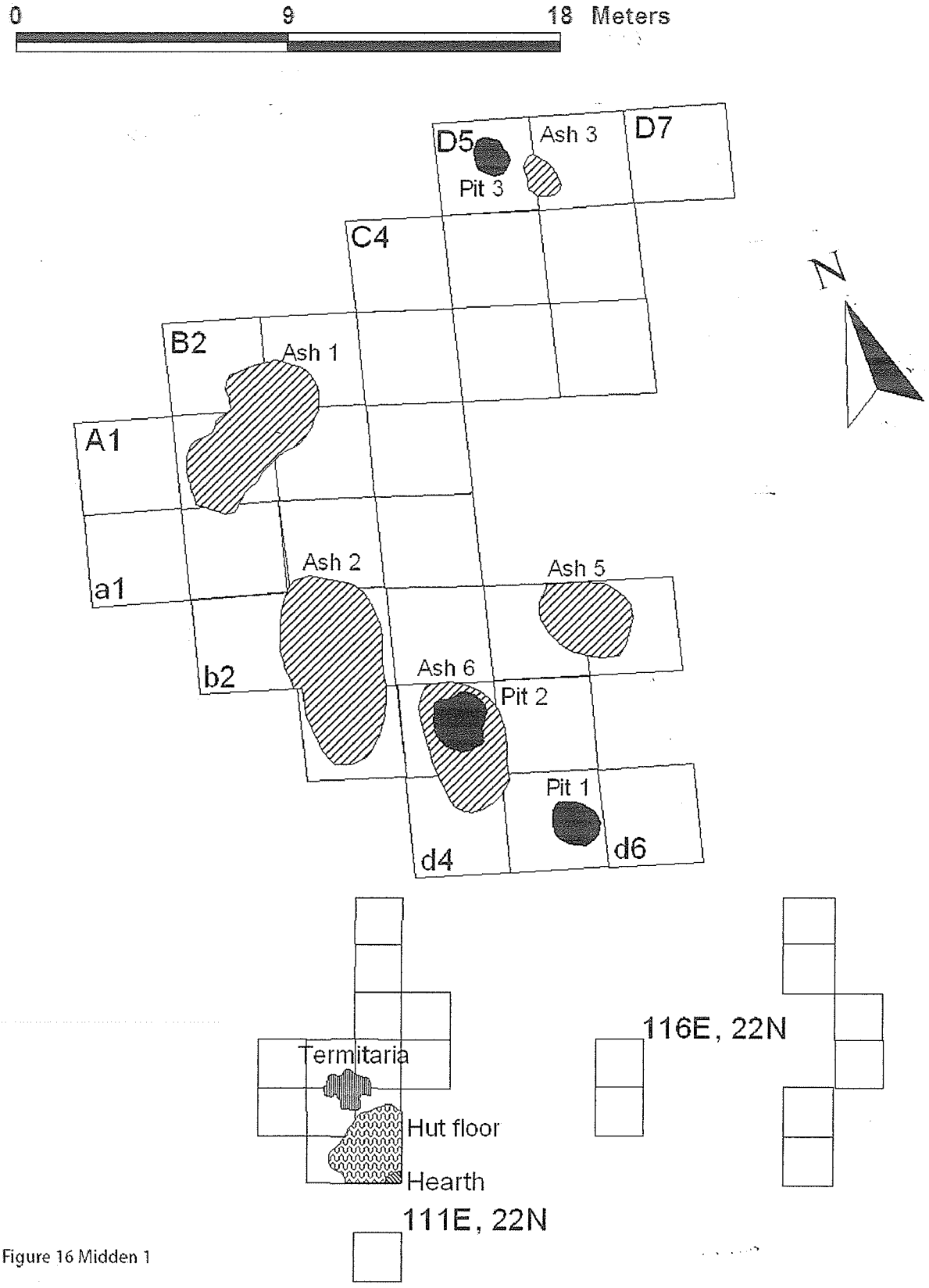


Figure 16 Midden 1

Ndondondwane - Cooking Ceramics
Horizon 1

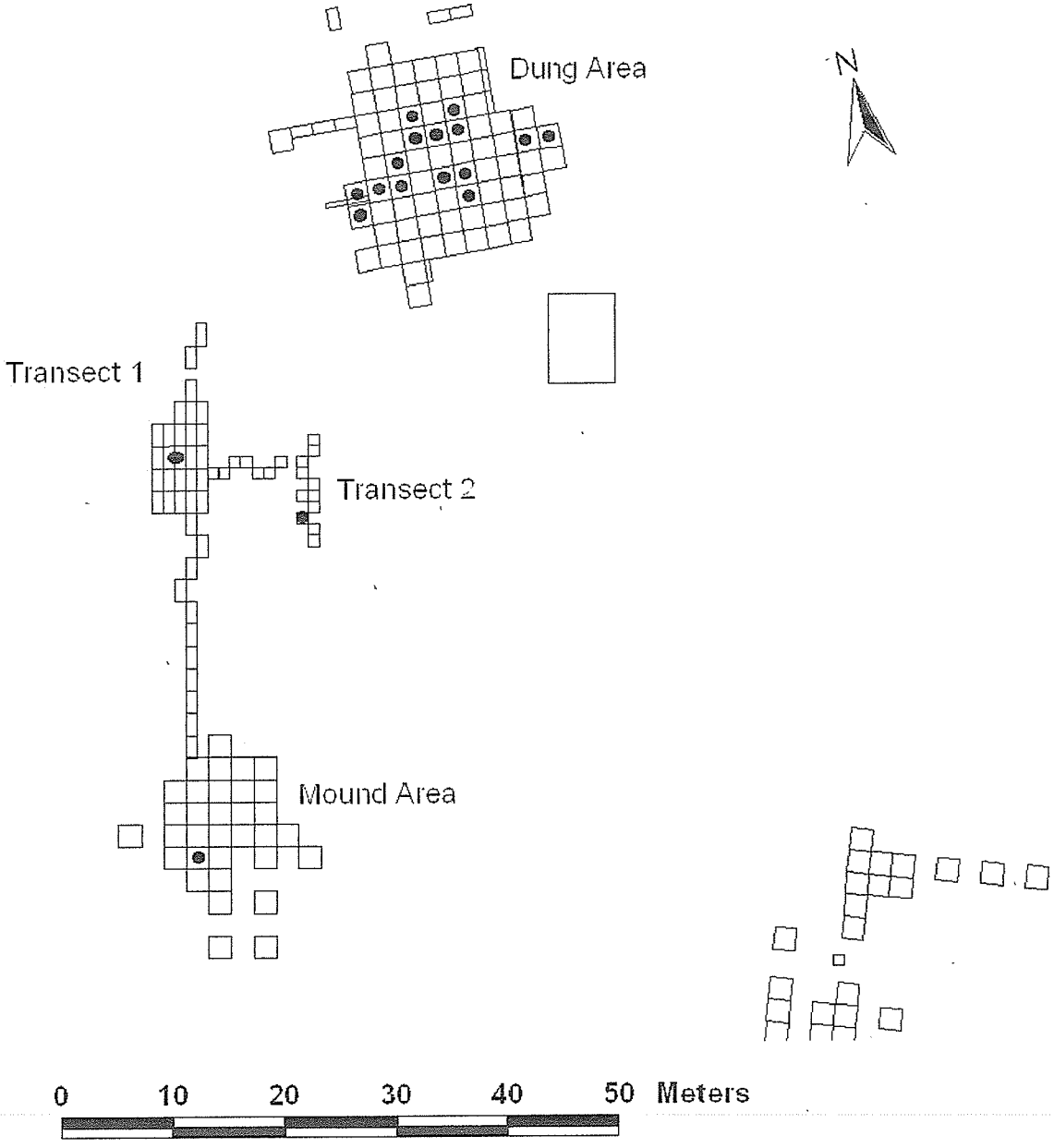


Figure 17 Cooking Ceramics H1

Ndondondwane - Serving Ceramics
Horizon 1

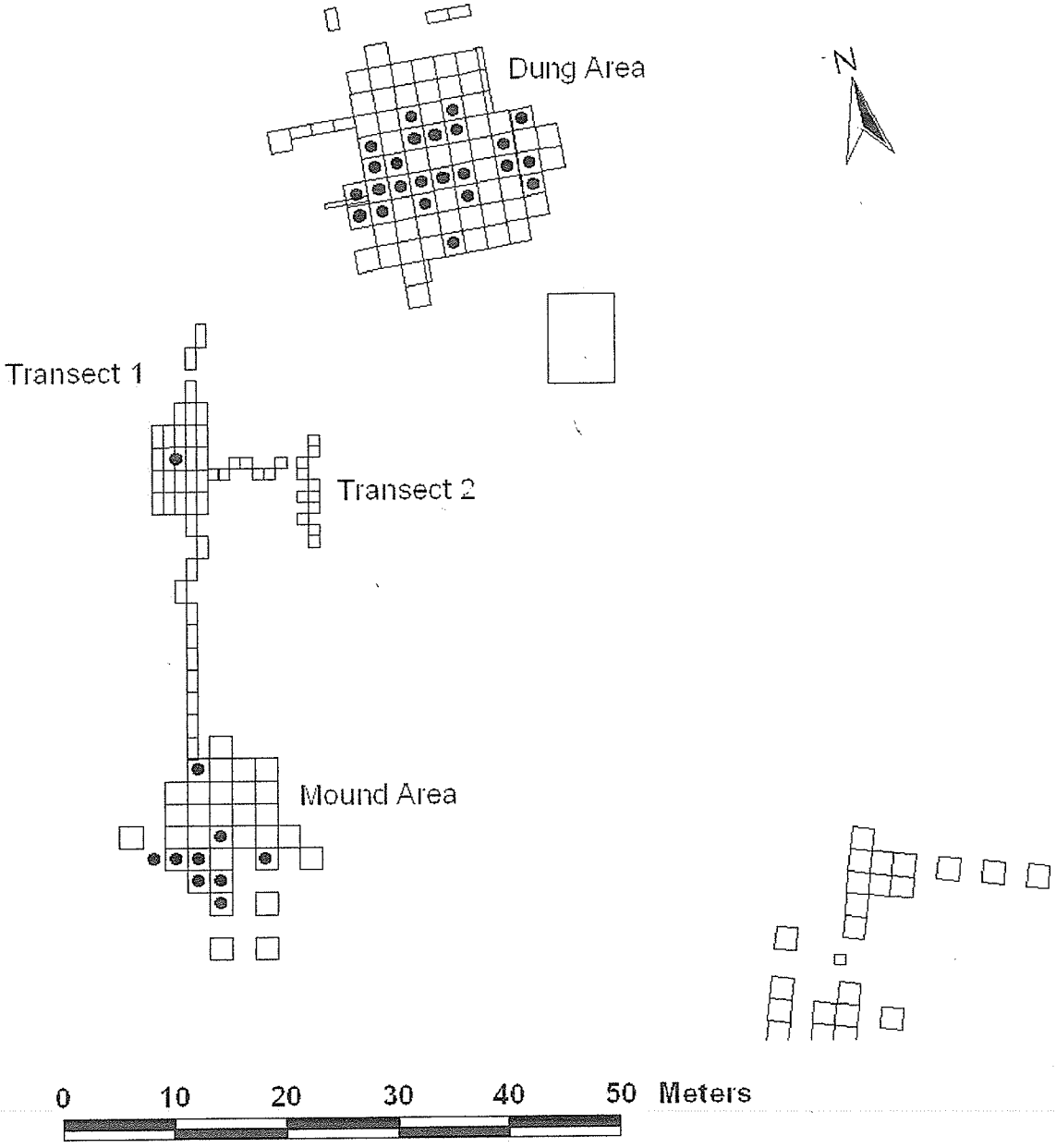


Figure 18 Serving ceramics

Ndondondwane - Transport/Storage Ceramics
Horizon 1

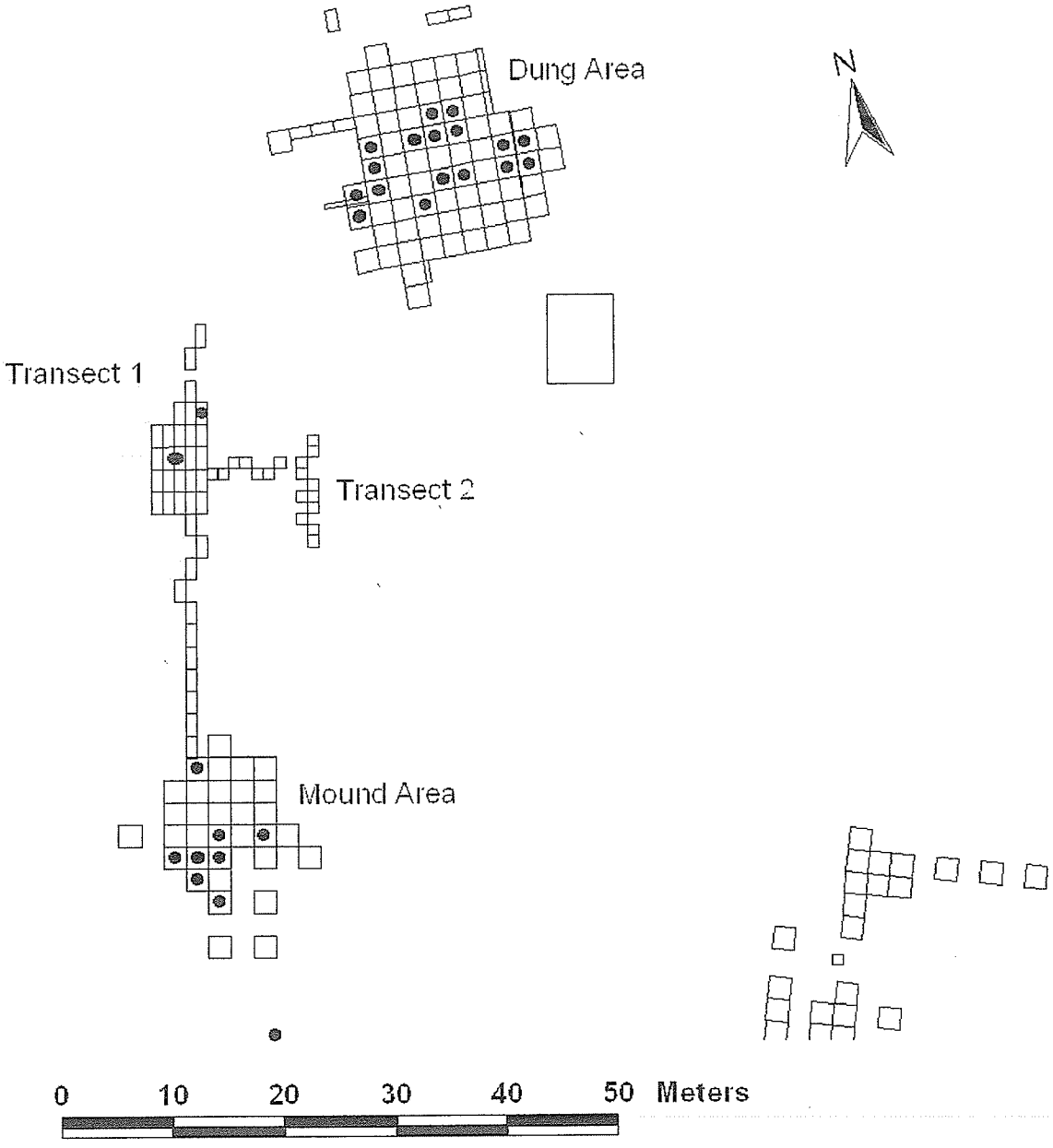


Figure 19 Transport Ceramics

Ndondondwane - Granary Daga
Horizon 1

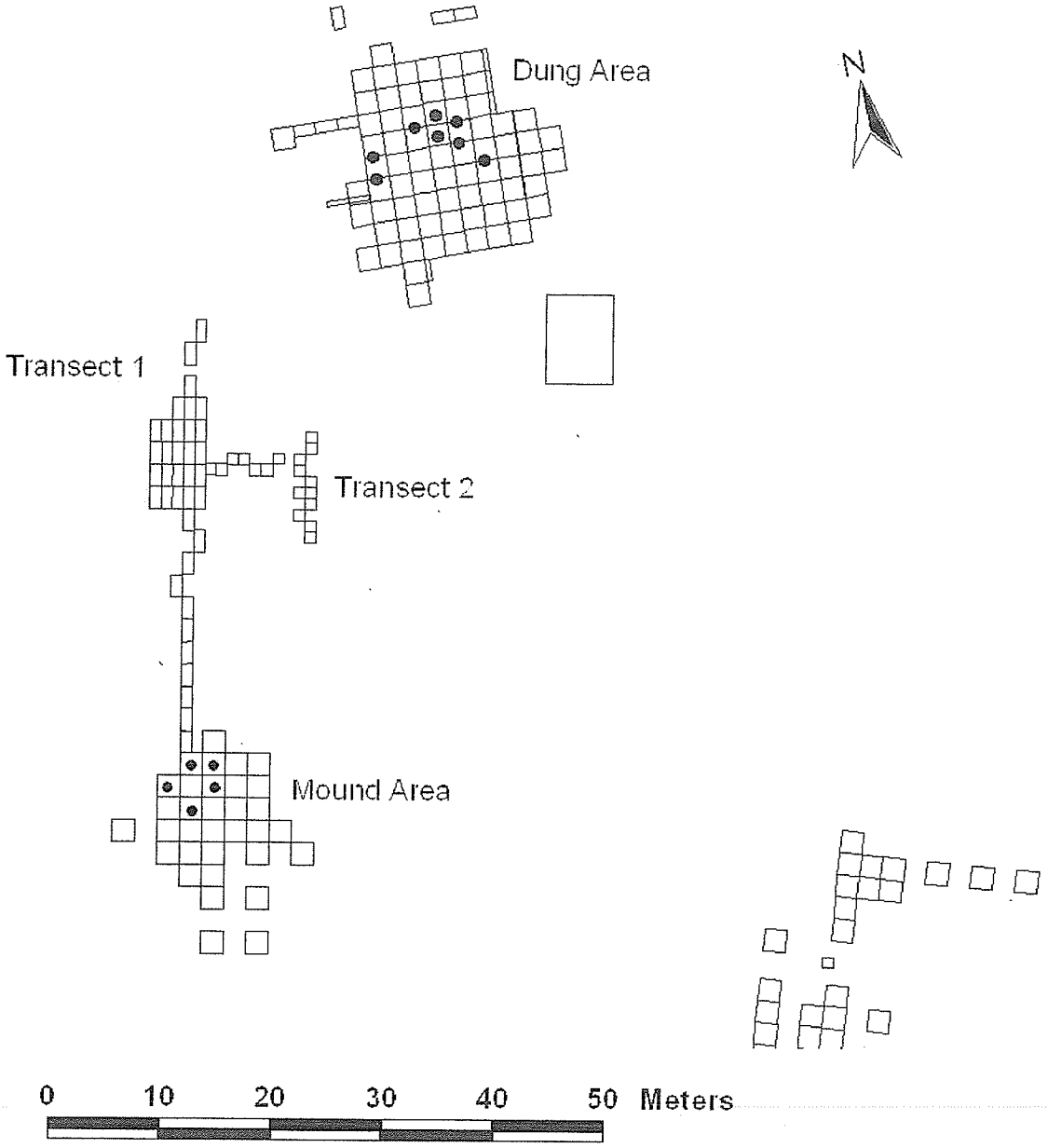


Figure 20 Granary daga H1

Ndondondwane - Hut Daga
Horizon 1

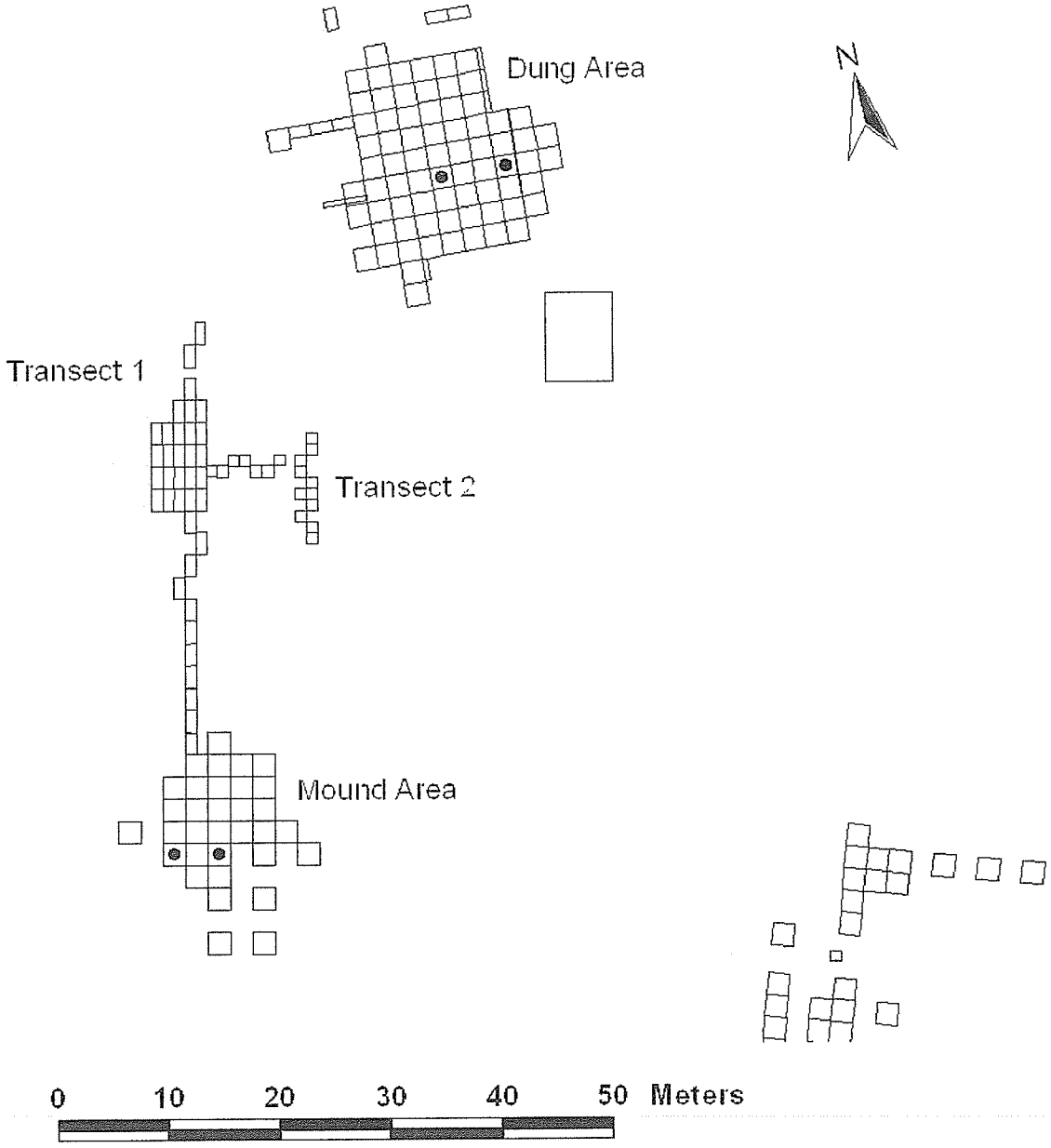


Figure 21 Hut daga H1

Ndondondwane - Ore Horizon 1

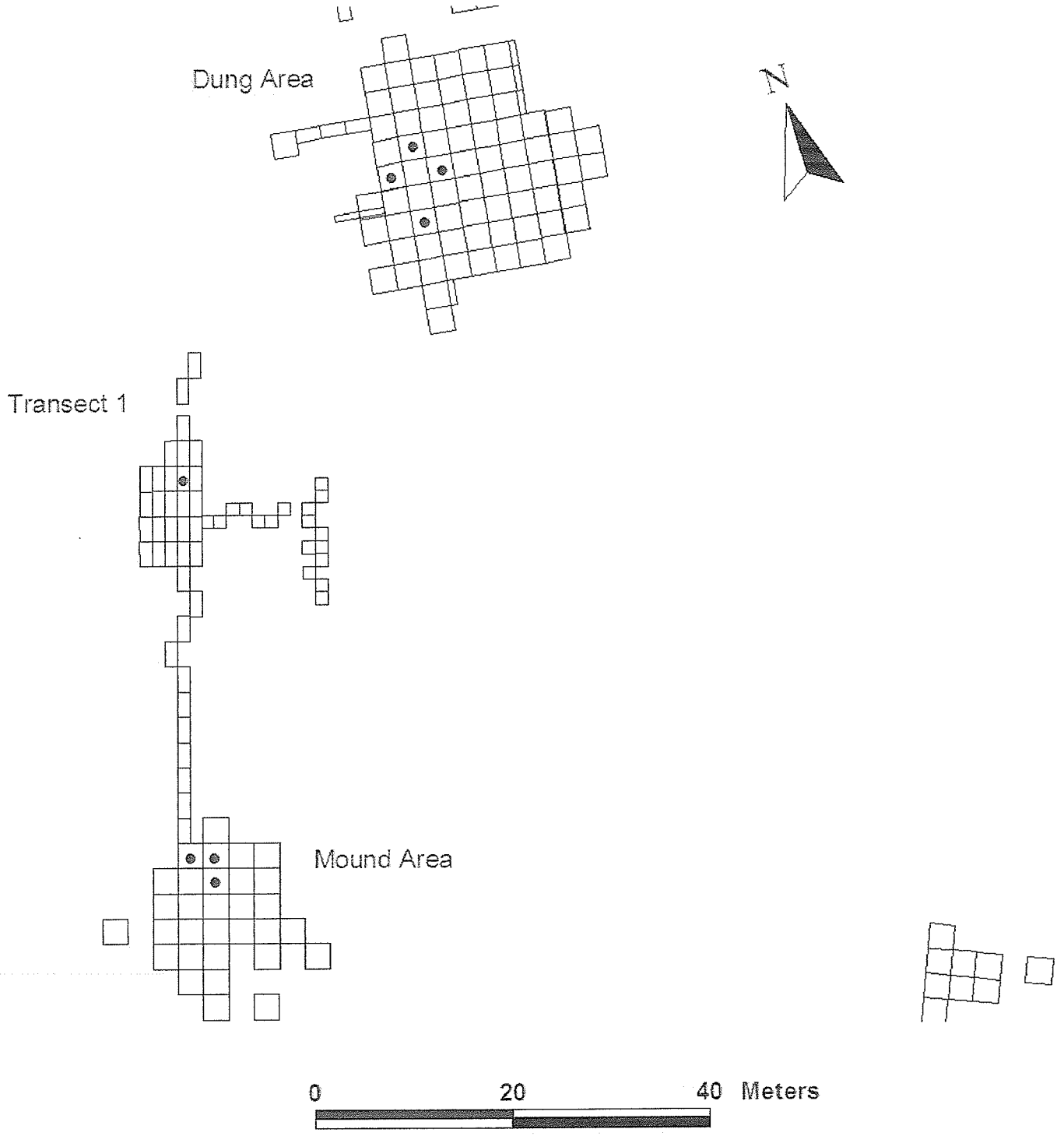


Figure 22 Ore Horizon 1

Ndondondwane - Slag Horizon 1

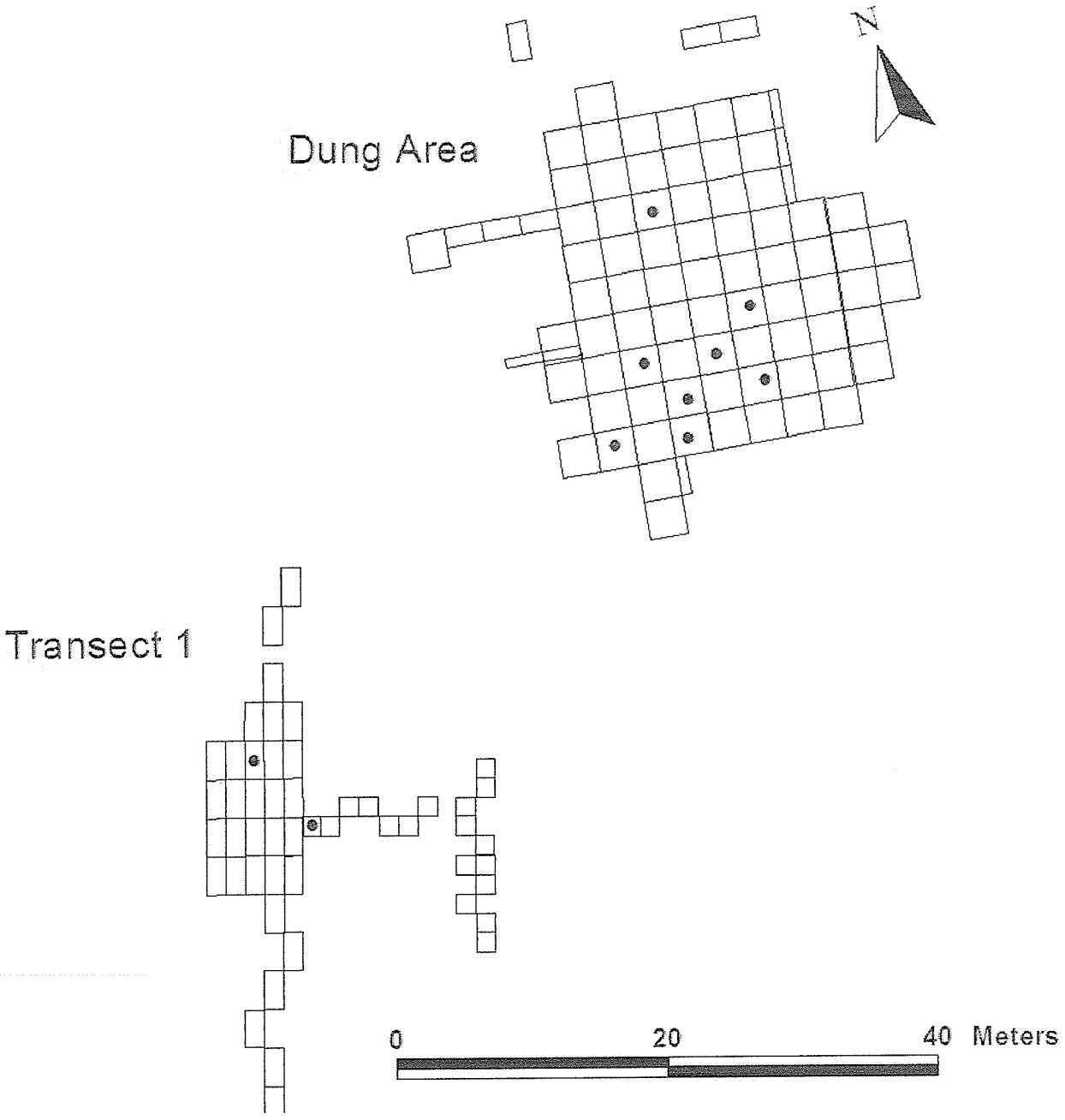


Figure 23 Slag Horizon 1

Ndondondwane - Upper Grinders Horizon 1

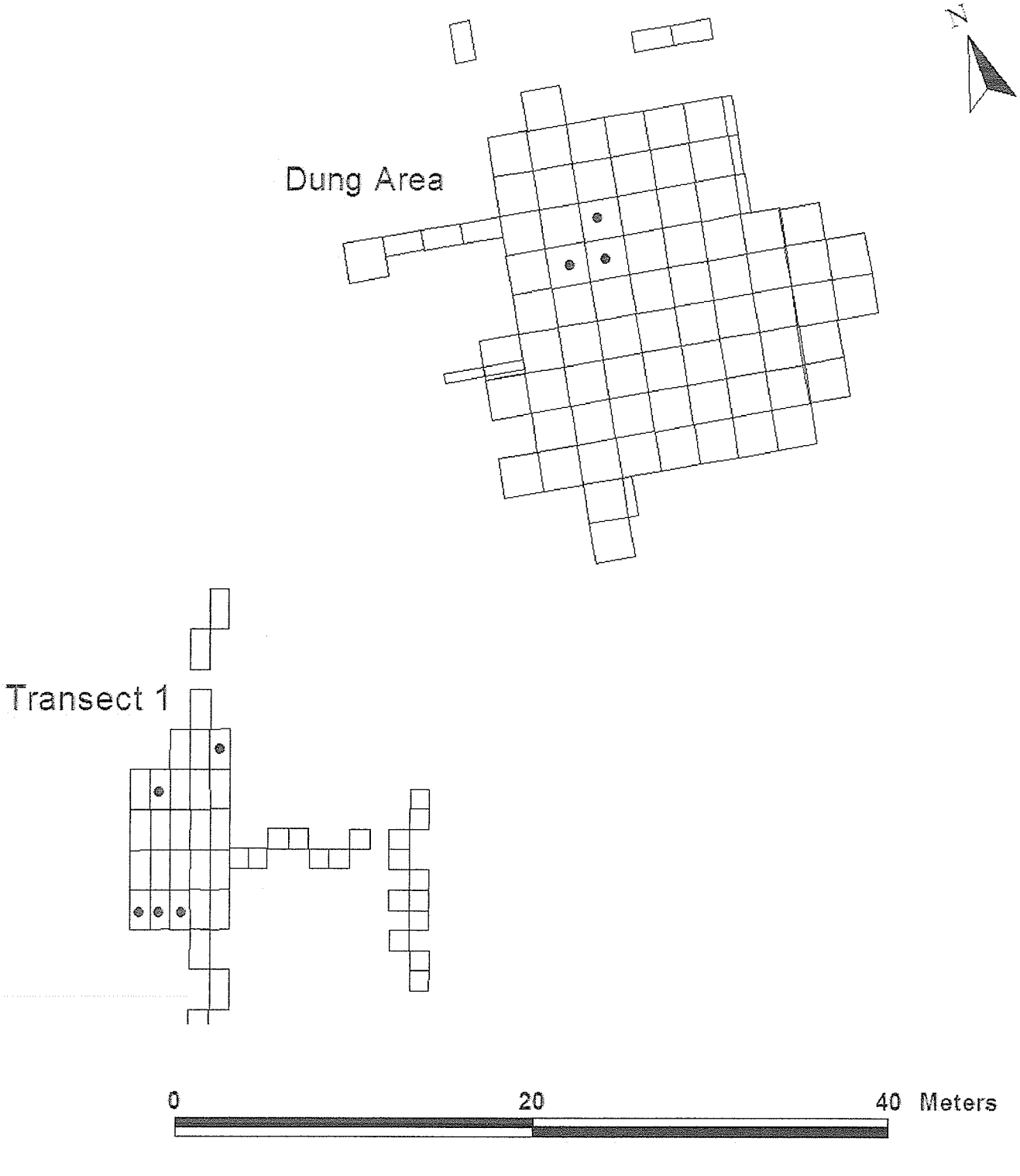


Figure 24 Upper Grinders Horizon 1

Ndondondwane - Lower Grinders Horizon 1

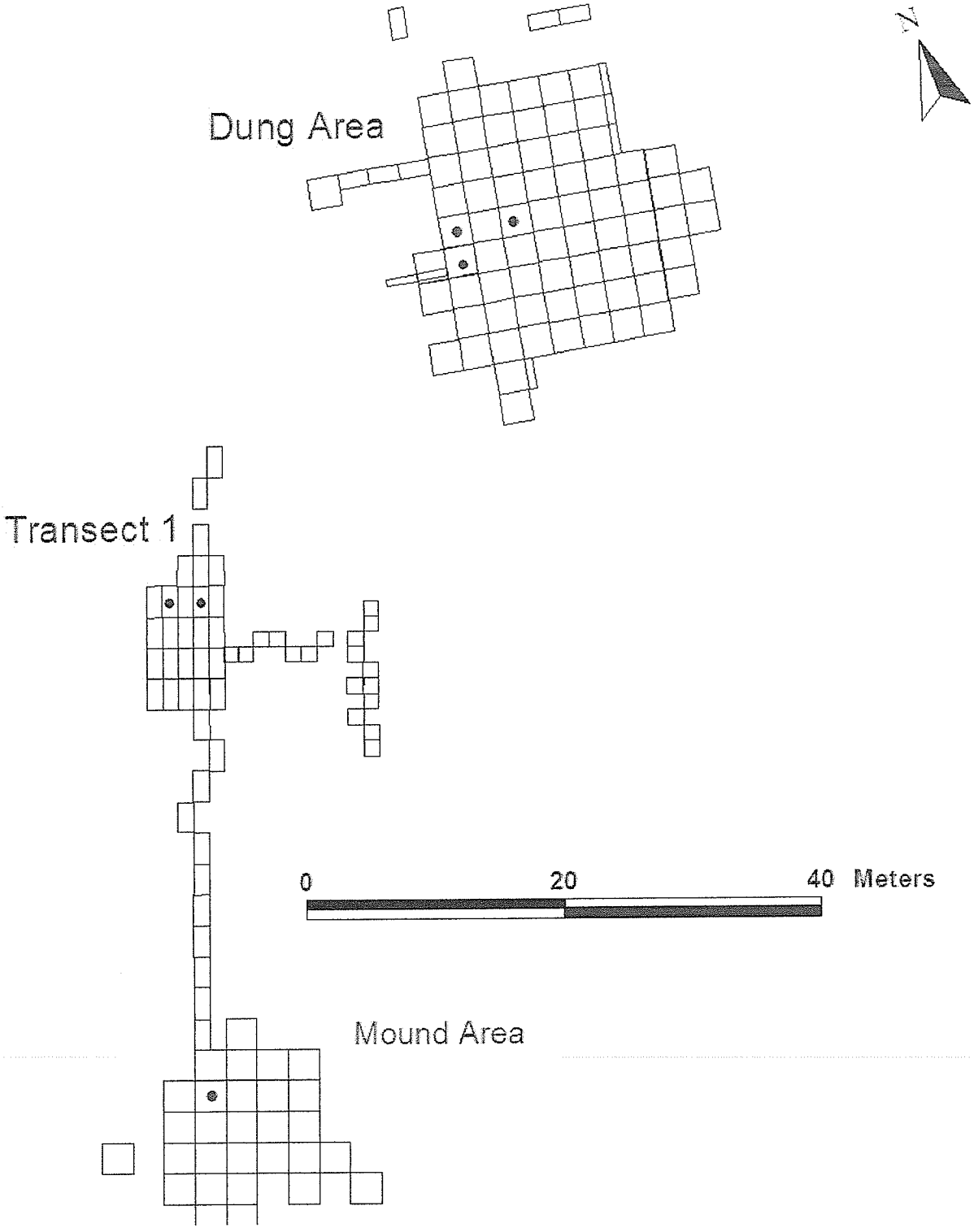


Figure 25 Lower Grinders Horizon 1

Ndondondwane - Bone tools
Horizon 1

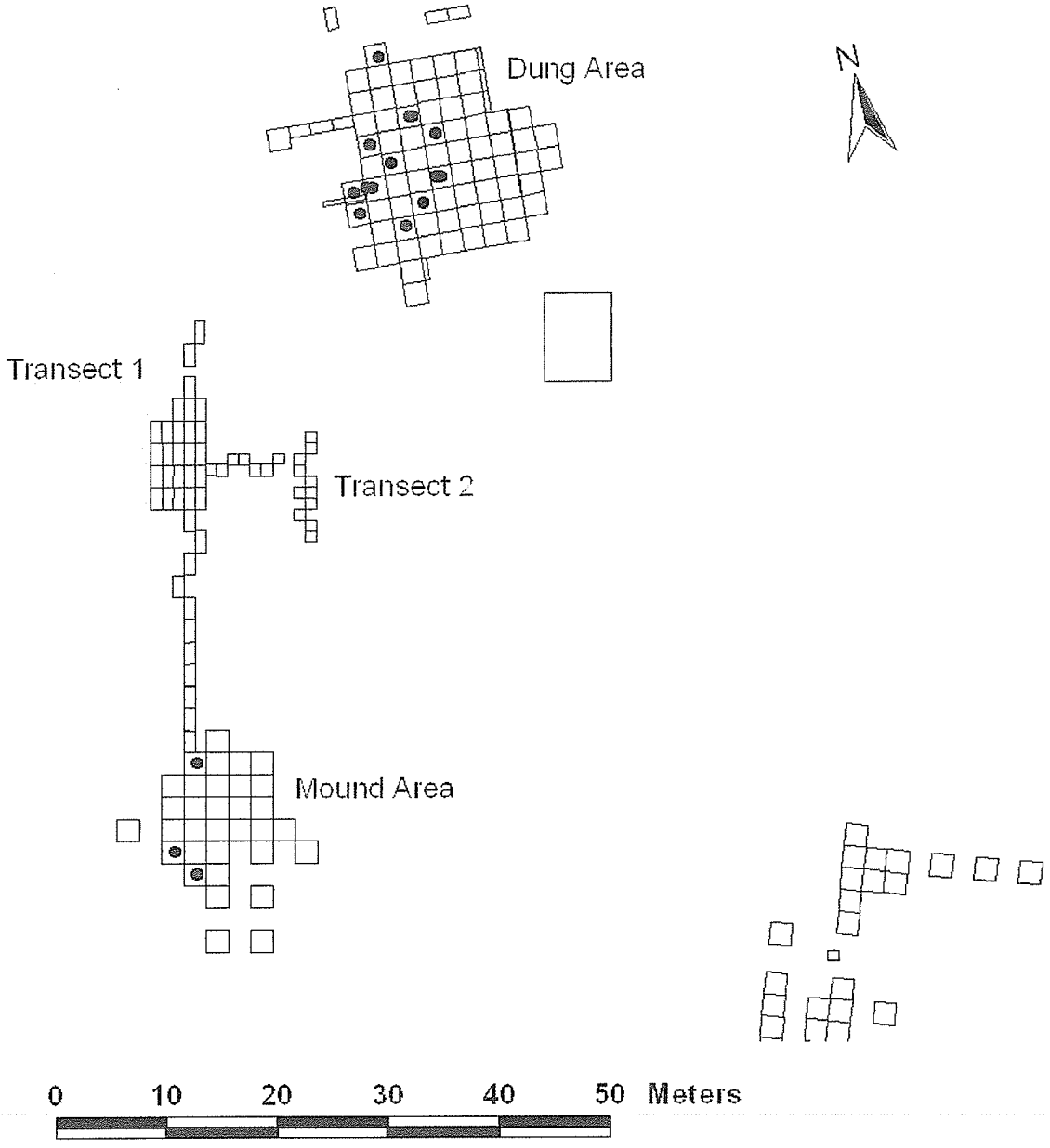


Figure 26 Bone tools H1

Ndondondwane - Cooking Pots
Horizon 2

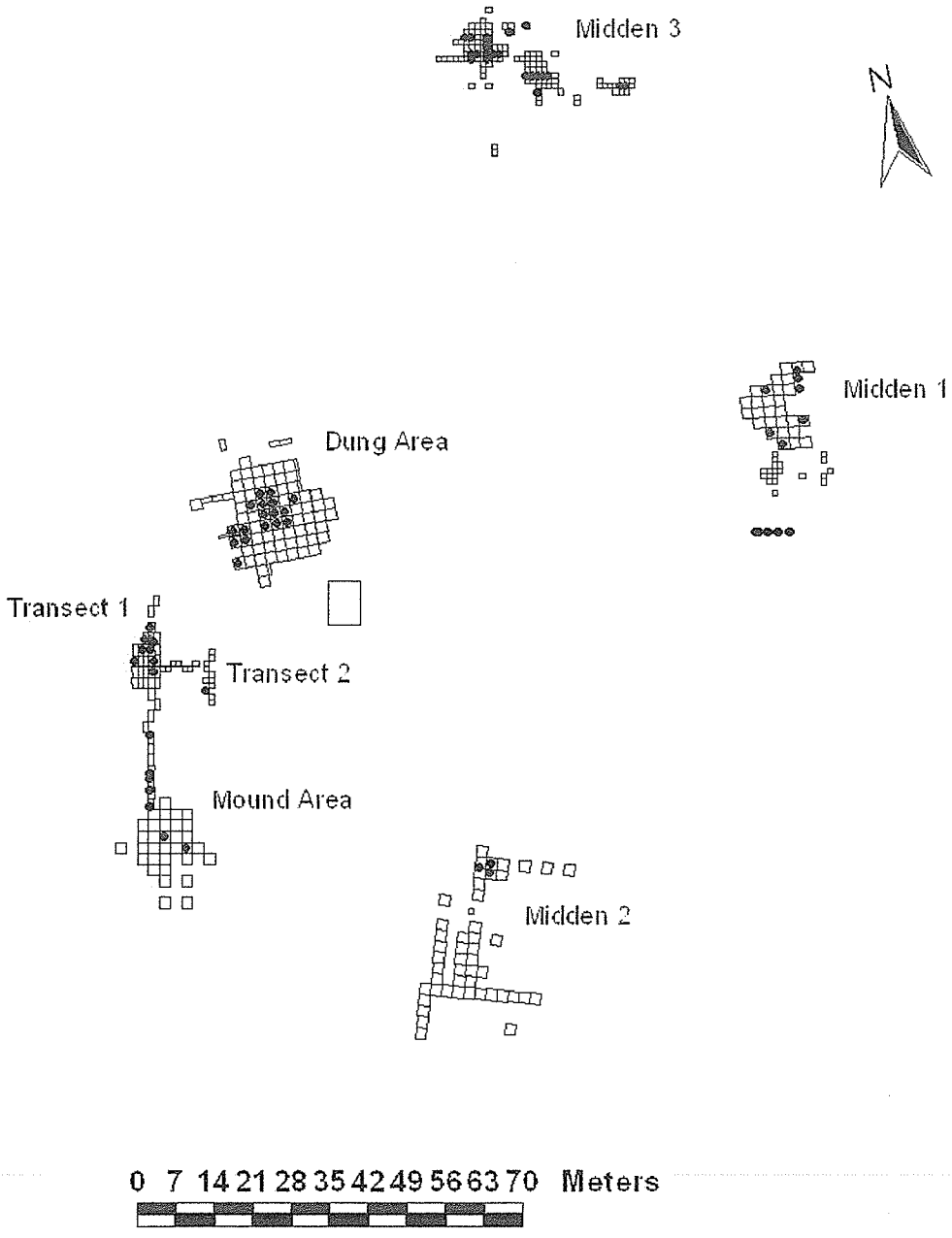


Figure 27 Cooking pots H2

Ndondondwane - Serving Ceramics Horizon 2

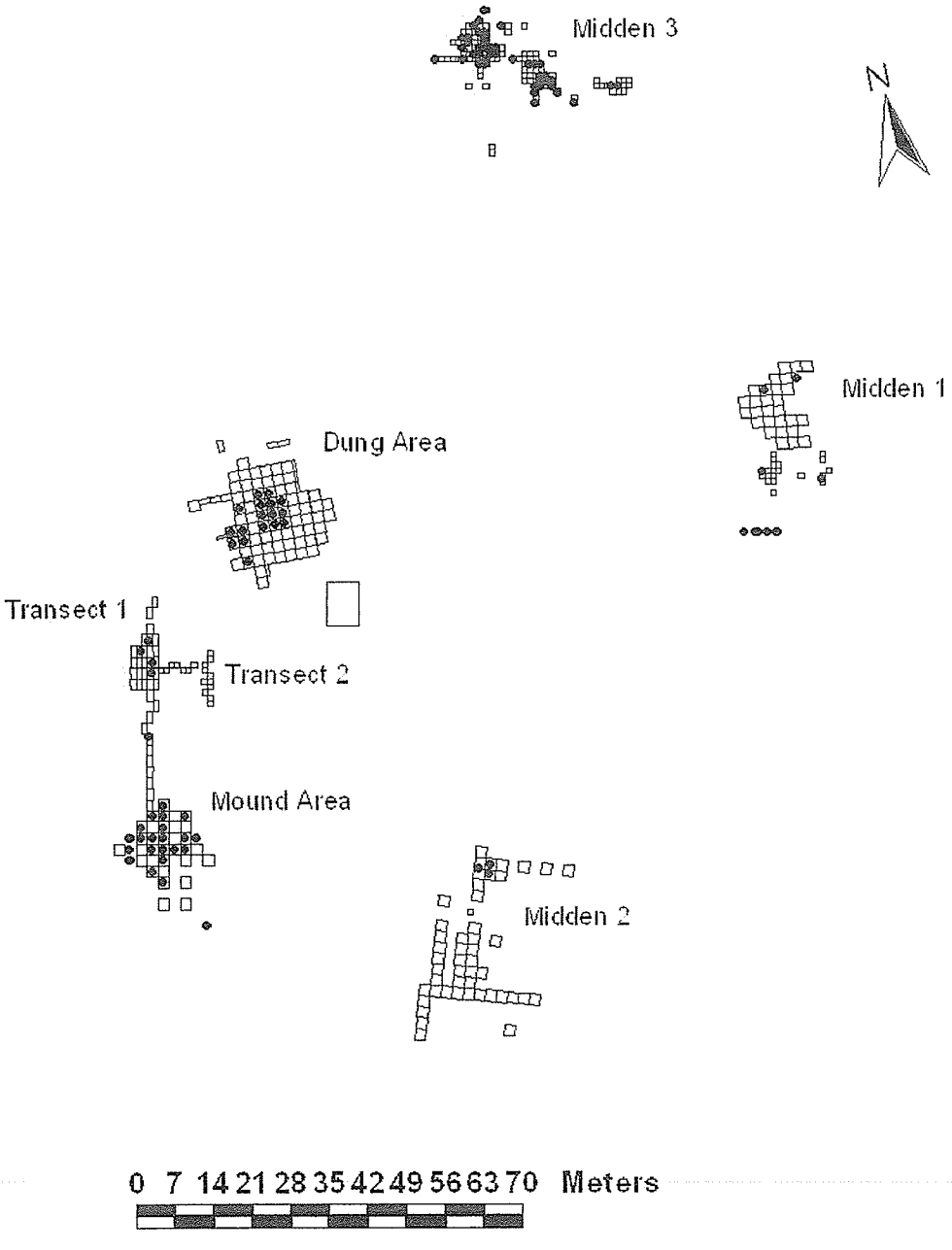


Figure 28 Serving Ceramics H2

Ndondondwane - Transport/Storage Horizon 2

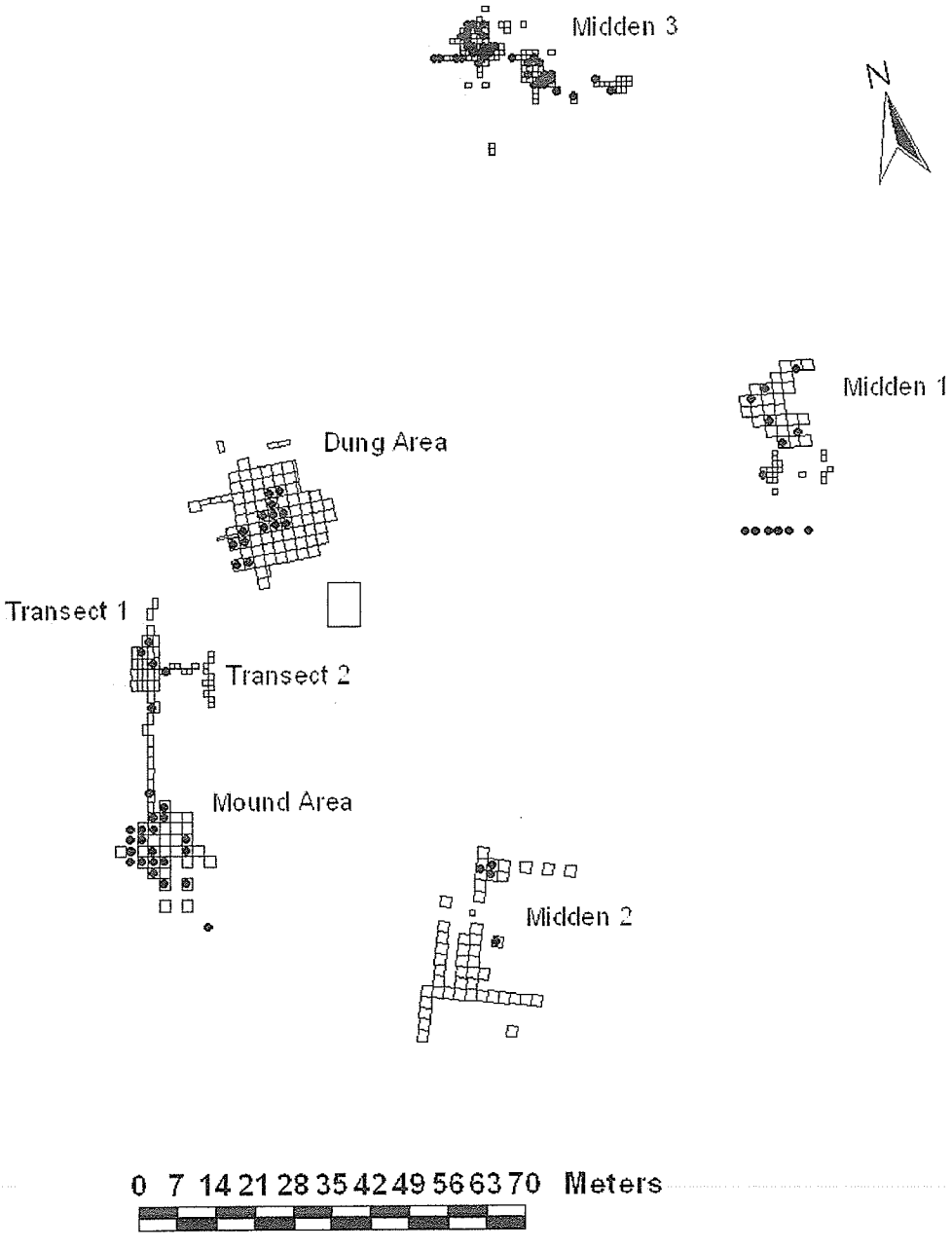


Figure 29 Transport/Storage H2

Ndondondwane - Granary Daga
Horizon 2

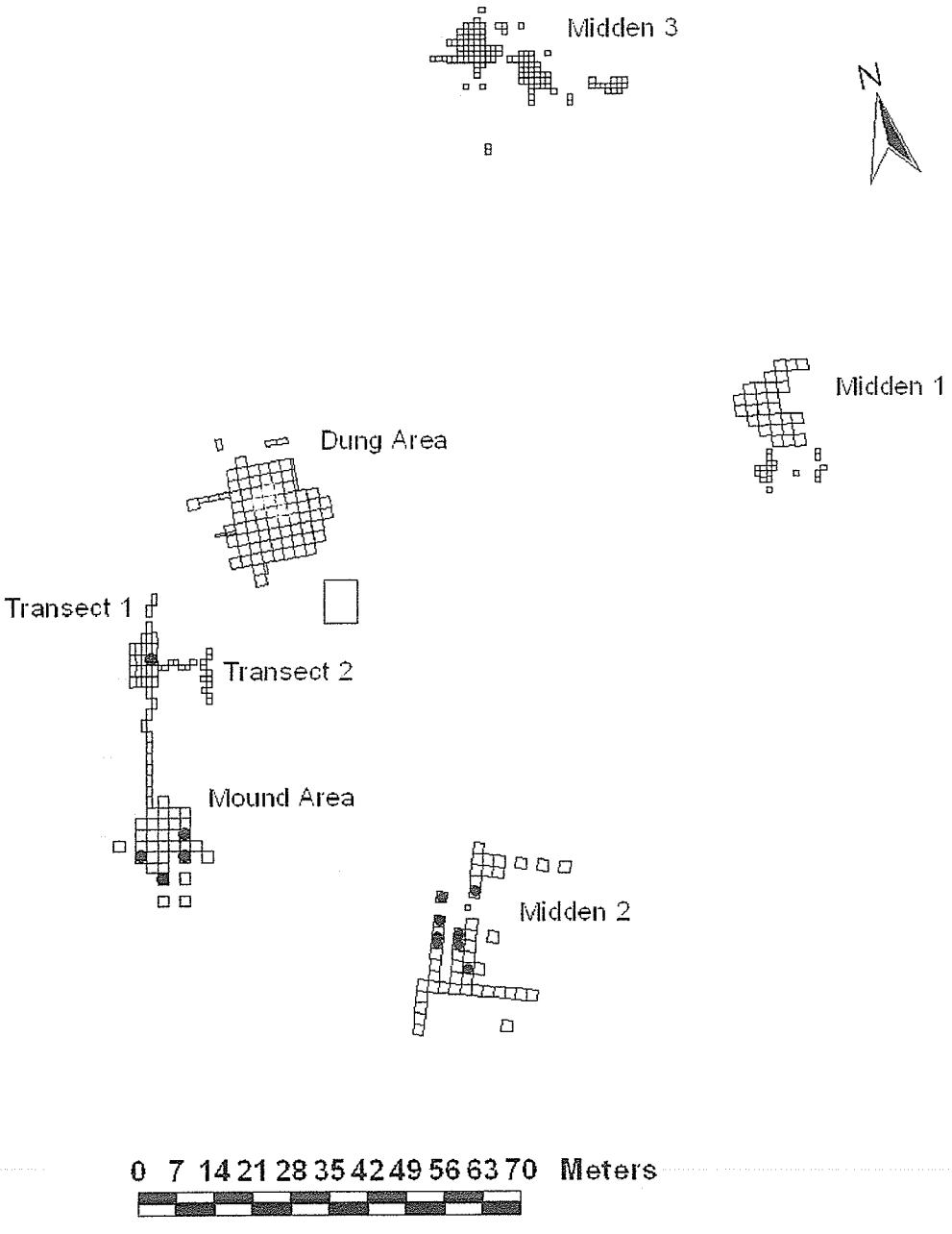


Figure 30 Granary daga H2

Ndondondwane - Hut Floor Daga Horizon 2

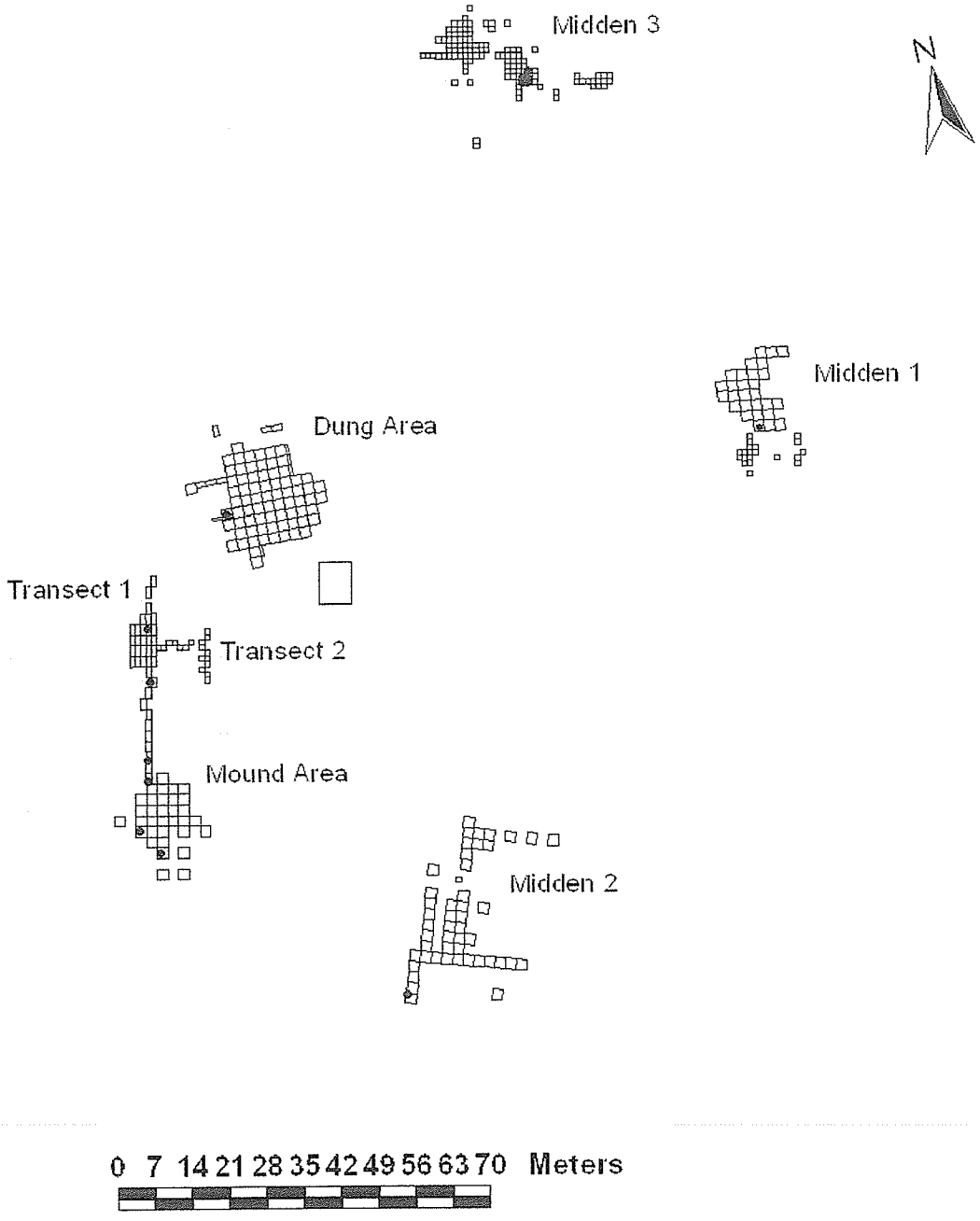


Figure 31 Hut Floor Daga H2

Ndondondwane - Ore Horizon 2

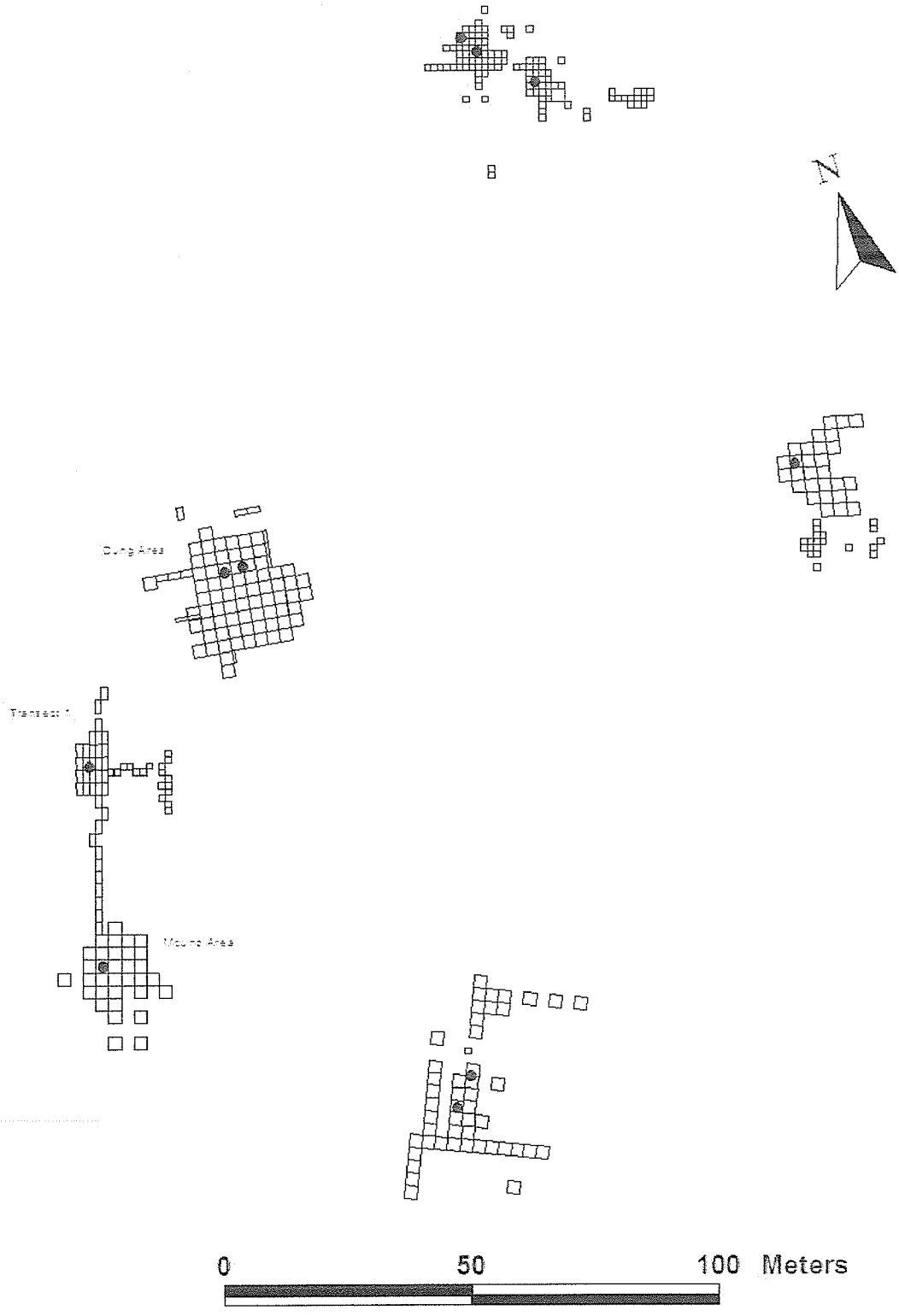


Figure 32 Ore Horizon 2

Ndondondwane - Slag Horizon 2

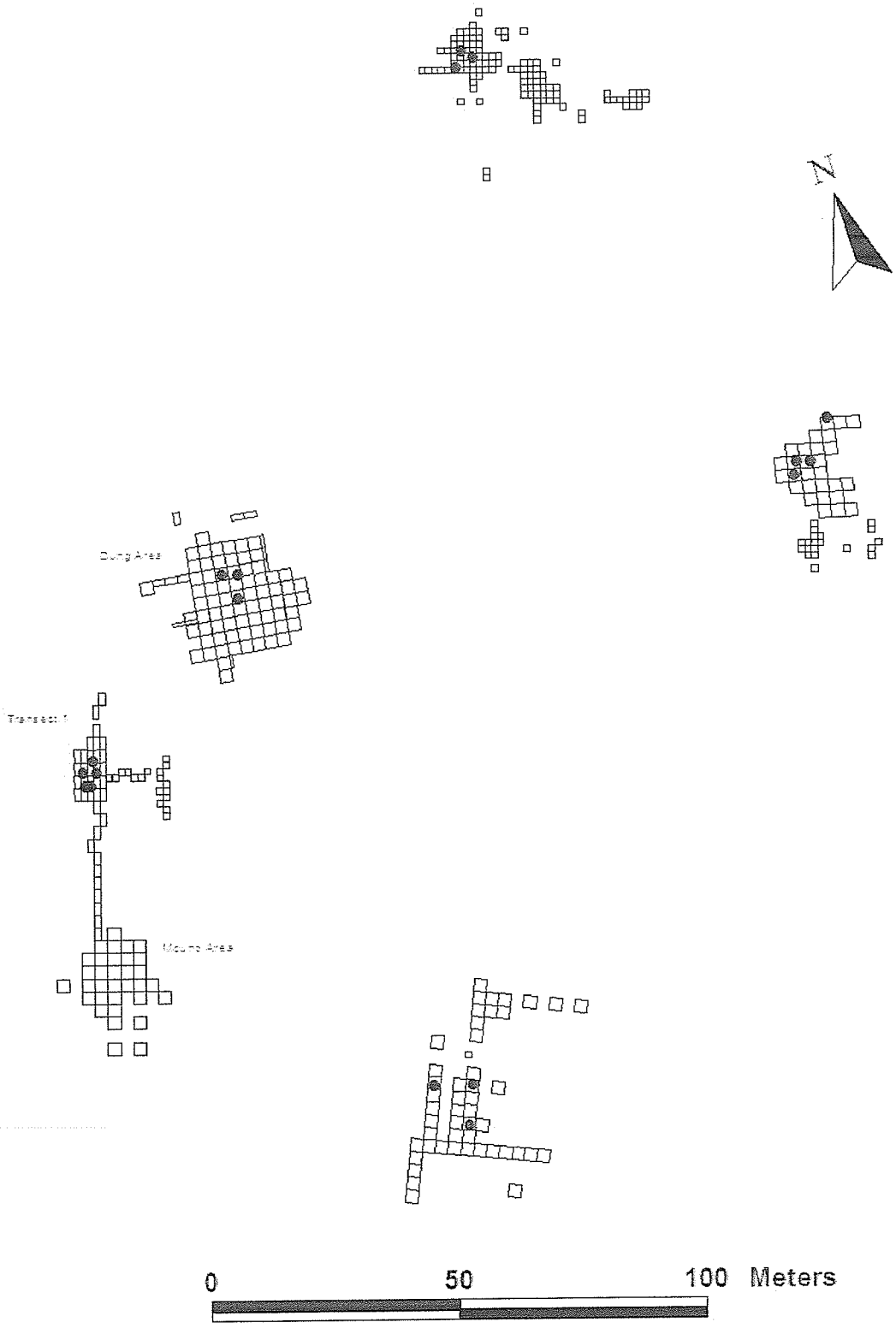


Figure 33 Slag Horizon 2

Ndondondwane -Upper Grinders
Horizon 2

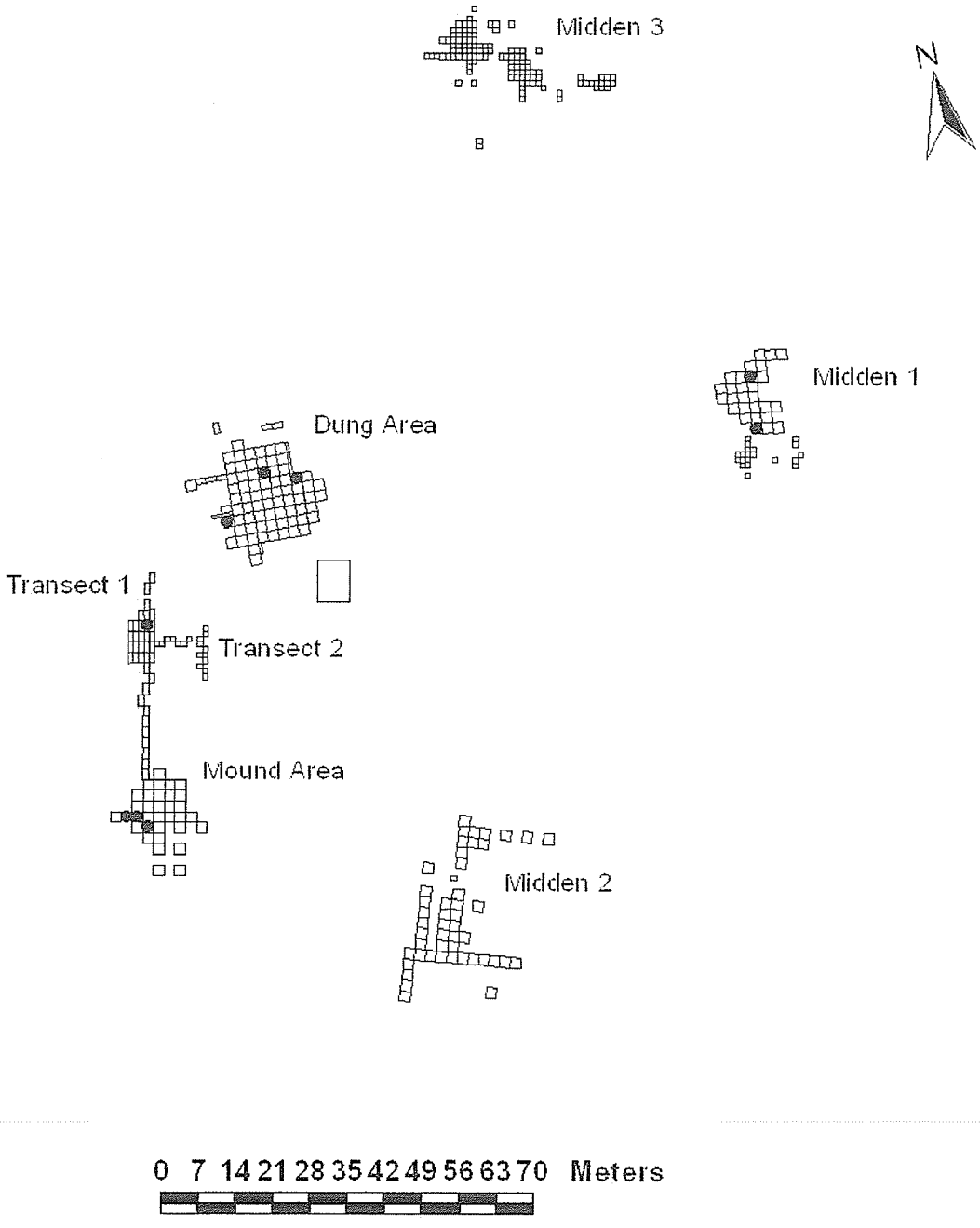


Figure 34 Upper Grinders H2

Ndondondwane - Lower Grinders
Horizon 2

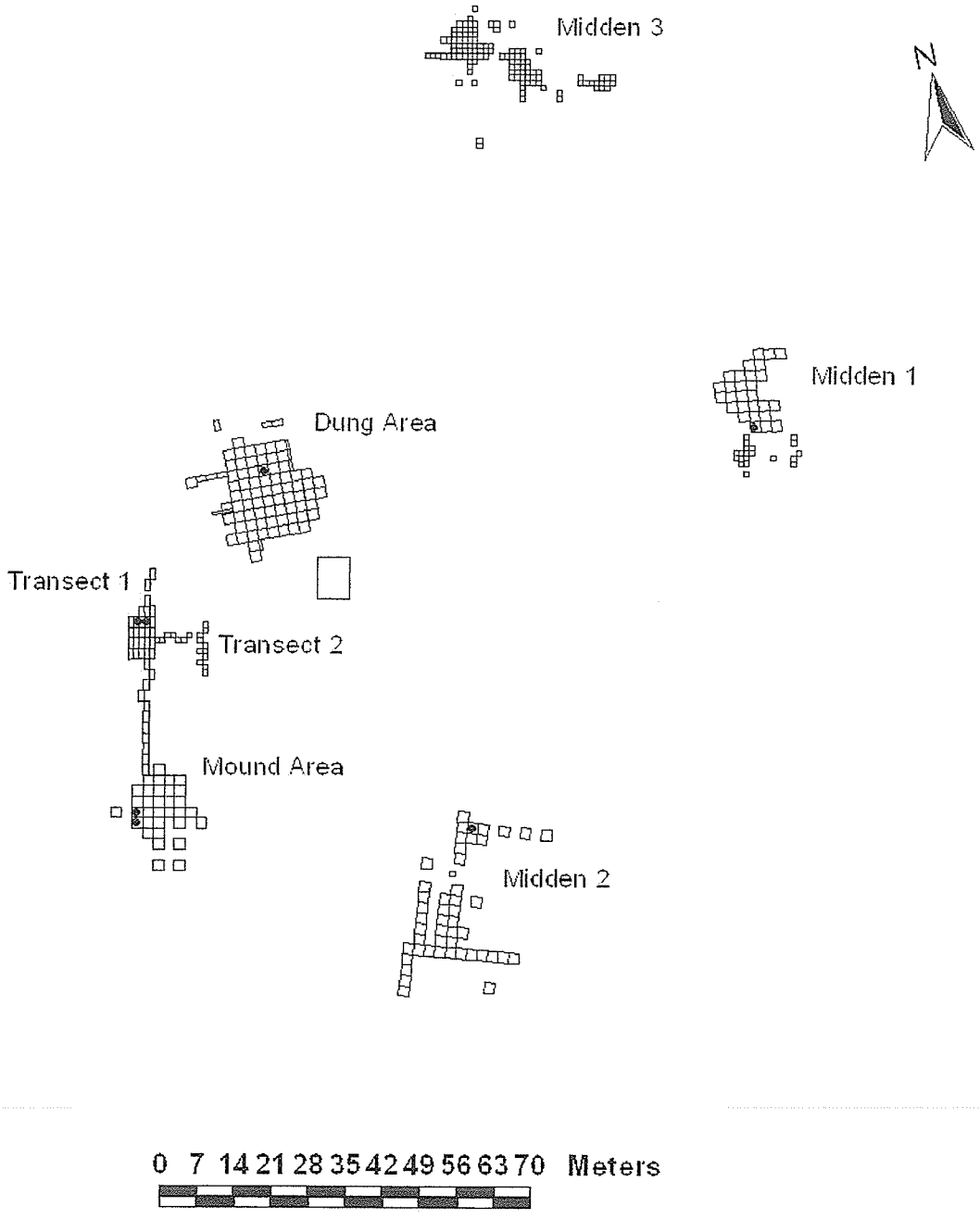


Figure 35 Lower Grinders

Ndondondwane - Bone tools
Horizon 2

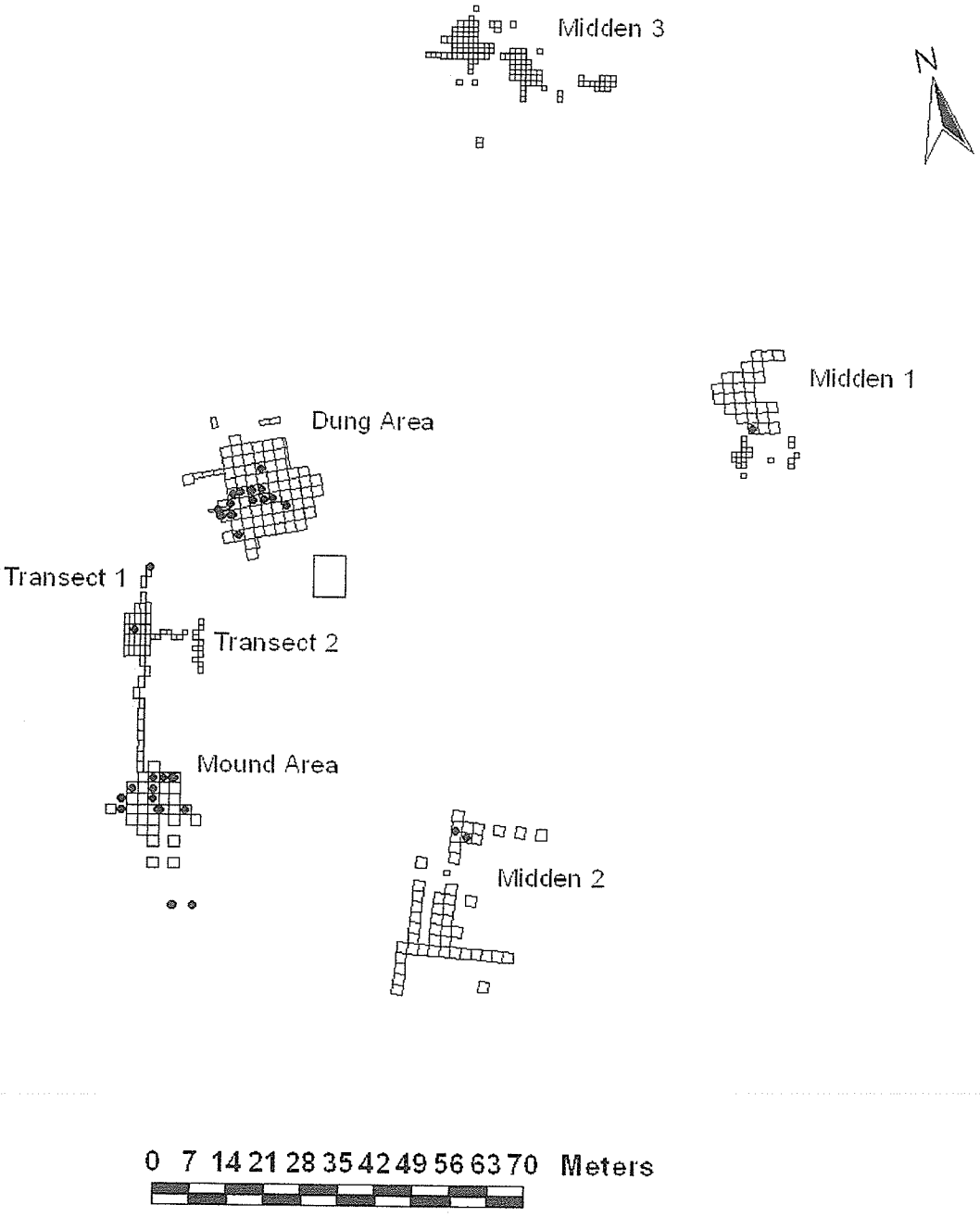


Figure 36 Bone tools H2

TABLES

Cooking Ceramics	Lower Pan Site Horizon		
	Quantity	% of cooking ceramic per area	% of all ceramic types/area
Mound Area	5	0.95%	0.84%
Dung Area	367	**69.90%**	37.91%
Transect 1	139	13.14%	**75.82%**
Transect 2	14	2.67%	100.00%
Midden 1	0	0	0
Midden 2	0	0	0
Midden 3	0	0	0

Table 1 Cooking Ceramics

Serving Ceramics	Lower Pan Site Horizon		
	Quantity	Percentage	% of all ceramic types/area
Mound Area	163	**45.40%**	27.35%
Dung Area	185	**51.53%**	19.11%
Transect 1	11	3.06%	12.09%
Transect 2	0	0	0
Midden 1	0	0	0
Midden 2	0	0	0
Midden 3	0	0	0

Table 2 Serving Ceramics

Storage/Transport Ceramics	Lower Pan Site Horizon		
	Quantity	Percentage	% of all ceramic types/area
Mound Area	428	**50.06%**	**71.81%**
Dung Area	416	**48.65%**	42.98%
Transect 1	21	2.46%	12.09%
Transect 2	0	0	0.00%
Midden 1	0	0	0
Midden 2	0	0	0
Midden 3	0	0	0

Table 3 Storage/Transport Ceramics

Granary Daga	Lower Pan Site Horizon		
	Quantity	Percentage	Volume (ml)
Mound Area	38	**67.86%**	1439
Dung Area	18	32.14%	335
Transect 1	0	0	0
Transect 2	0	0	0
Midden 1	0	0	0
Midden 2	0	0	0
Midden 3	0	0	0

Table 4 Granary Daga

Hut Floor Daga	Lower Pan Site Horizon		
	Quantity	Percentage	Volume (ml)
Mound Area	8	10.96%	450
Dung Area	3	0.49%	20
Transect 1	549	89.85%	0
Transect 2	0	0	0
Midden 1	0	0	0
Midden 2	0	0	0
Midden 3	0	0	0

Table 5 Hut Floor Daga

*daga was not excavated

Ore	Lower Pan Site Horizon		
	Quantity	Percentage	weight (g)
Mound Area	7	**46.67%**	35
Dung Area	7	**46.67%**	97.02
Transect 1	1	6.67%	20.05
Transect 2	0	0	0
Midden 1	0	0	0
Midden 2	0	0	0
Midden 3	0	0	0

Table 6 Ore

Slag	Lower Pan Site Horizon		
	Quantity	Percentage	weight (g)
Mound Area	0	0	0
Dung Area	58	**93.55%**	797.66
Transect 1	2	3.23%	18.56
Transect 2	2	3.23%	6.87
Midden 1	0	0	0
Midden 2	0	0	0
Midden 3	0	0	0

Table 7 Slag

Upper Grinders	Lower Pan Site Horizon		
	Quantity	Percentage	Volume (ml)
Mound Area	0	0	0
Dung Area	3*	15.79%	0
Transect 1	16	**84.21%**	0
Transect 2	0	0	0
Midden 1	0	0	0
Midden 2	0	0	0
Midden 3	0	0	0

Table 8 Upper Grinding Stones

*two are ground flat, and one has a v-shape

Lower Grinders	Lower Pan Site Horizon		
	Quantity	Percentage	Volume (ml)
Mound Area	1	12.50%	0
Dung Area	3	37.50%	0
Transect 1	4	**50.00%**	0
Transect 2	0	0	0
Midden 1	0	0	0
Midden 2	0	0	0
Midden 3	0	0	0

Table 9 Lower Grinding Stones

Mound Area 0 ground flat

Dung Area 0one has a u0shape depression

Bone Tools	Lower Pan Site Horizon		
	Quantity	Percentage	Volume (ml)
Mound Area	5	20.00%	0
Dung Area	20	**80.00%**	0
Transect 1	0	0	0
Transect 2	0	0	0
Midden 1	0	0	0
Midden 2	0	0	0
Midden 3	0	0	0

Table 10 Bone Tools

Cooking Ceramics	Pan Site Horizon 2		
	Quantity	% of cooking ceramic per area	% of all ceramic types/area
Mound Area	3	0.23%	0.97%
Dung Area	394	29.71%	36.75%
Transect 1	152	11.46%	59.61%

Transect 2	9	0.68%	**90.00%**
Midden 1	185	13.95%	**68.52%**
Midden 2	67	5.05%	56.78%
Midden 3	516	**38.91%**	17.43%

Table 11 Cooking Ceramics

Serving Ceramics	**Pan Site Horizon 2**		
	Quantity	**% of serving ceramic per area**	**% of all ceramic types/area**
Mound Area	81	3.64%	26.13%
Dung Area	346	15.54%	32.28%
Transect 1	93	4.18%	36.47%
Transect 2	0	0.00%	0.00%
Midden 1	29	1.30%	10.74%
Midden 2	33	1.48%	27.97%
Midden 3	1644	**73.85%**	**55.52%**

Table 12 Serving Ceramics

Storage/Transport Ceramics	**Pan Site Horizon 2**		
	Quantity	**% of storage/transport per area**	**% of all ceramic types/area**
Mound Area	226	15.65%	**72.90%**
Dung Area	332	22.99%	30.97%
Transect 1	10	0.69%	3.92%
Transect 2	1	0.07%	10.00%
Midden 1	56	3.88%	20.74%
Midden 2	18	1.25%	15.25%
Midden 3	801	**55.47%**	27.05%

Table 13 Storage/Transport Ceramics

Granary Daga	**Pan Site Horizon 2**		
	Quantity	**Percentage**	**Volume (ml)**
Mound Area	0	**0**	0
Dung Area	6	18.75%	190
Transect 1	3	9.35%	20
Transect 2	0	0.00%	0
Midden 1	0	0.00%	0
Midden 2	23	71.9%	10500
Midden 3	0	0.00%	0

Table 14 Granary Daga

Hut Floor Daga	Pan Site Horizon 2		
	Quantity	Percentage	Volume (ml)
Mound Area	23	7.30%	160
Dung Area	1	0.32%	5
Transect 1	31	9.84%	2295
Transect 2	0	0.00%	0
Midden 1	2	0.63%	75
Midden 2	7	2.22%	105
Midden 3	251	**79.68%**	745

Table 15 Hut Floor Daga

Upper Grinders	Pan Site Horizon 2		
	Quantity	Percentage	Volume (ml)
Mound Area	4*	**40.00%**	0
Dung Area	3**	30.00%	0
Transect 1	1***	10.00%	0
Transect 2	0	0.00%	0
Midden 1	2****	20.00%	0
Midden 2	(3 pit 2)	0.00%	0
Midden 3	0	0.00%	0

Table 16 Upper Grinders

*two are ground flat, one has a v0shape and one has u0shape depression

**one has a v0shape depression

***v0shape depression

****one has a v0shape depression

Lower Grinders	Pan Site Horizon 2		
	Quantity	Percentage	Volume (ml)
Mound Area	2*	**25.00%**	0
Dung Area	1	12.50%	0
Transect 1	2	**25.00%**	0
Transect 2	0	0.00%	0
Midden 1	1**	12.50%	0
Midden 2	2*** (n=8 pit 2)	**25.00%**	0
Midden 3	0	0.00%	0

Table 17 Lower Grinders

*round and ground flat depression

* flat depression

***both flat

Ore	Pan Site Horizon 2		
	Quantity	Percentage	Weight (gm)
Mound Area	5	12.50%	25
Dung Area	5	12.50%	90.9
Transect 1	5	12.50%	93.36
Transect 2	0	0.00%	0
Midden 1	3	7.50%	78.26
Midden 2	3	7.50%	17.02
Midden 3	19	47.50%	808.15

Table 18 Ore

Slag	Pan Site Horizon 2		
	Quantity	Percentage	Weight (gm)
Mound Area	0	0	0
Dung Area	20	12.66%	181.61
Transect 1	70	**44.30%**	1403.09
Transect 2	4	2.53%	26.74
Midden 1	44	27.85%	830
Midden 2	5	3.16%	85.6
Midden 3	15	9.49%	135.05

Table 19 Slag

Bone Tools	Pan Site Horizon 2		
	Quantity	Percentage	Volume (ml)
Mound Area	38	**51.35%**	0
Dung Area	32	**43.24%**	0
Transect 1	1	1.35%	0
Transect 2	0	0.00%	0
Midden 1	1	1.35%	0
Midden 2	2	2.70%	0
Midden 3	0	0.00%	0

Table 20 Bone Tools

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